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ABSTRACT

The proceedings of the second Preventive Law Institute, which focused on the legal aspects of educational uses of technology, are included in this report. Following the preface, two overviews (Thomas M. Griffin, Fred "Rick" W. Weingartan) provide an introduction to preventive law for educators and explore the nature of information technology and its application to education. The following two papers are titled "Negotiating Contracts for the Acquisition of Computer Hardware and Software by State Education Agencies and Some Comments on Copyright and Intellectual Property Rights" (Shannon T. Vale) (an outline of this paper is provided in Appendix B) and "Students' Rights: Privacy and Equal Access and Teachers' Traditional Role and Hesitancy to Change" (Thomas M. Griffin). Next is a summary of the discussions of the following four issues: (1) technological effectiveness and computer literacy, (2) equal access and equity; (3) educational changes and teacher training, and (4) the legal issues of contract negotiation and infringement of patents and copyrights on hardware and software. Following this summary is a report of a roundtable discussion of legislative barriers to full use of new technology in education. A closure session, dealing with suggestions, strategies, and resources, is also reported. Appendix A provides the agenda and descriptions of the presenters, participants, and institute staff. (DCS)

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INSTITUTE ON PREVENTIVE LAW AND TECHNOLOGY

Report of an Invitational Institute

April 7, 1983
Sheraton Santa Fe Inn
Santa Fe, New Mexico

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SOUTHWEST
EDUCATIONAL DEVELOPMENT LABORATORY
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PREFACE

The courthouse and the law books have become as familiar to the school policymaker and administrator as the school campus and the textbooks. Donald Jensen, Institute for Research on Educational Finance and Governance, Stanford, points out that "court intervention in education has produced some beneficial and really significant consequences. But at the same time, it's had the 'tar baby effect.'" It's that 'tar baby effect' that we are trying to avoid -- that incredible, never-ending cost of litigation in terms of money, time, and quality of education.

This never-ending high cost of litigation is the impetus for SEDL's Preventive Law Institutes where lawyers and educators examine future crisis issues together before they become a matter of litigation and court reform. This is the second Preventive Law Institute coordinated by the Regional Planning and Service Project.

The ground work for Preventive Law Institutes began in the summer of 1980 when then National Insitute of Education (NIE) Director Michael Timpane, California State Department of Education Chief Counsel Thomas Griffin, Agnes Toward, and Martha L. Smith discussed the need for active planning for legal problems. We recognized the importance of developing policies to implement and maintain mandated programs with the least degree of legal risk. This recognition inspired the first institute that was held in November, 1981, in Houston, Texas. There we defined preventive law as a broad educational issue and examined P.L. 94-142 and state regulation of textbook selections from a preventive stance.

For this second institute (see Appendix A), it would be good to say that we have taken on the very simple, uncomplicated, well-understood issue of educational technology, but such a statement would be received with laughter. Despite the complications inherent in education, technology, and the law, the institute presenters have demystified a number of the issues and examined problems before they are a matter of court concern.

For faciliating the Institute, thanks are due Patricia Duttweiler who, as the Project's new policy analyst, has done an extraordinary job in defining the issues, seeking the highly competent experts, and generally seeing to every facet of the Institute from the most mundane detail to the most significant concept. Also, appreciation is due Cynthia Levinson, project administrator, who proposed the idea of a Preventive Law Institute focusing on educational uses of technology and who supported Pat in her work. Without the conscientious assistance of Barbara Lecroy, administrative assistance, there would have been no programs, support materials, or conference housing, and you would not be reading the document in your hand. We are grateful also to Merily Keller for her highly competent work in producing these proceedings.

Finally, we express our appreciation to Dick Lallmang, National Institute of Education project monitor, for his consistent support for the concept of preventive law. He early understood that avoiding litigation could both save money and enhance the quality of education.

Preston C. Kronkosky
Executive Director

Martha L. Smith
Director, Division of
Educational Information Services

OVERVIEW: PREVENTIVE LAW INTRODUCTION

by

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Educators and Lawyers: How They Interact

You are undoubtedly familiar with the concept of preventive law, or you wouldn't be here. We have been trying to develop this concept for educators and education attorneys for quite some time. We have had mixed success in this process.

For numerous reasons, educators probably use their lawyers less effectively than any other administrators. Most state and district administrators come from school sites that don't generally have the services of an attorney available. These administrators therefore develop attitudes and professional behavior that include making their own legal judgments. When they recognize legal problems, they answer those problems without legal support.

Administrators of all ranks in small districts, in larger districts, in the state, and even in the United States Department of Education tend to behave that same way. To the extent that they understand the legal issues, they themselves handle problems until getting into trouble. Then when a lawsuit comes and an attorney is indispensable, those administrators rush out and try to hire an attorney to patch everything together. This approach seems to be the opposite of the way it should be.

Education As An Industry

In the United States today, we have an education industry of about 120 billion dollars a year. We spend 10 to 12 billion a year in California alone for K-12 education. If you had a private business in the United States that spent 120 billion dollars a year, it would use lawyers extensively. An administrator in private industry would not write his or her own contract, fire an employee, or negotiate a contract with a union without using a lawyer. These things just wouldn't happen. That is why most decisions made day by day in private industry never result in litigation.

The whole concept of preventive law is based on the notion of an ounce of prevention. I'm not sure we as educators can get along with an ounce; maybe it's more appropriate to suggest that a pound of prevention is better than a pound of cure.

Education and the Courts

Education has become increasingly legalistic not only in terms of the number of cases decided by the courts in the last 10 years as compared to even the previous 50, but also in the importance of and in the kinds of cases now being decided by the courts. In addition, courts are making educational policy decisions now instead of administrators. If you don't want a court to make your educational decisions, you must get involved in preventive law. Judges are singularly unqualified to make educational policy decisions. Often there ought to be a study, or more information, instead of a decision. But what you get when you go to court, for better or worse, is a decision.

Educational policy issues ought to be decided outside of the courtroom. These decisions, though, can't be made elsewhere unless educational decision-makers (the superintendents and the boards) are aware of the legal issues, have thought out those legal issues in advance, and have taken steps to minimize the risk of loss. That's preventive law, a form of legal planning service that prevents legal issues from arising and legal challenges from being made.

The High Cost of Litigation

To some degree we can't eliminate legal challenges as long as we have a governmental system that pays people to sue us. Challenges will continue as long as we have statutes that pay plaintiffs two to three times their actual legal expenses for winning, while the educational system can barely afford to defend itself. For instance, we have attorney fee awards in California that encourage plaintiffs to come to court against us with as many as six lawyers and legal assistance from law students. We come to court with a half-time deputy attorney general or a full-time deputy attorney general with a workload of 15 to 20 other cases. When we lose, having been out-gunned, the court awards the plaintiffs outrageous attorneys' fees and then they can load up and sue us again. It's happening time after time. California was victimized recently when attorneys' fees of two million dollars were asked by plaintiffs in a case in which we paid thirty thousand defending ourselves. How ridiculous to be squandering resources in that kind of defense. Even when we win, we only break even. The plaintiffs can make progress by winning; the defendants can only maintain the status quo. That's the nature of the law suit.

Anticipating Legal Issues

Progress can only be made by making affirmative decisions in advance of the suits. The first step is anticipating both the legal and the programatic issues. I call your attention to the work that was done by the Education

Commission of the States, by Meryl McClung in particular, on high school proficiency testing. Very early in the development of the concept of high school proficiency standards, McClung started researching the kinds of legal issues a court would apply in handling a contest or a suit brought by a student denied a diploma. How would a court analyze a constitutional challenge? He applied, with the help of testing experts, some principles dealing with test validity that were already fairly well in place. He did some advance thinking and programatic legal research on the issues that enabled him to suggest strategies for states and districts to use when implementing high school proficiency testing in order to reduce the risk of legal challenge.

From thirty to thirty-five states have implemented those strategies, and there have been very few challengers. We used McClung's process in the way we implemented the high school proficiency concept in California. I thought we were going to be inundated with law suits, but we weren't. We didn't get one law suit from the whole concept, and we're moving to implement the testing in specific phases as McClung suggested. We saved an enormous amount of money in legal research time and in avoiding delays from law suits by incorporating the research he had done earlier.

Educators generally don't plan such strategies. Of course, we try to stay out of court. It's bad form for the government to be in court all the time, especially if the superintendent and board are elected. The decision-makers don't like to read that a law suit has been filed charging them with doing bad things to children. They don't like to run on that platform.

Court cases are a waste of resources. They take time away from valuable changes and concepts being implemented. Even if you never get sued at all, it seems to me that publicly elected officials have a responsibility to do things right by making sure young people's legal rights are not violated. Also, officials have a responsibility to make sure the changes in education that are good for society are implemented in a way that doesn't do damage to the constituents.

Planning and Structuring Legal Strategy

In producing strategy, you have to try to think through the concepts and the issues that a court would use and anticipate the questions a court would ask in answering a challenge. Then, you must structure legal strategy to minimize these court issues.

There are a few examples where we have begun to anticipate legal issues and structure appropriate strategies. The Education Commission of the States is involved in this area and they need our support since they are out-gunned. Also the National Association of State Boards of Education (NASBE) Legal Conference has been trying to coordinate an effort in this area with the Council of Chief State School Officers. NASBE's electronic mail box is going to be a help. There will be some research, some thinking, and some early cases which the lawyers can share around the country. Please try to tie into that.

We have been trying for some time to convince school board members and chief state school officers that this coordination should be done. I think they're beginning to realize that they don't have to be nervous when their lawyers meet with each other. You can reemphasize this to them when you go home.

Encourage your boards to let you come to the NASBE Conference so you can meet the other lawyers from around the country. Then, when you have a problem, you'll have an idea of whom you can call. There's preventive work already being done that you can use to your advantage. And, a lot of work you're doing on this area, others might be able to use.

This institute is another example of preventive work. SEDL has done an excellent job of identifying issues which are on the cutting edge, bringing people together to discuss these issues, soliciting articles on the issues, and publishing their report synthesis to help you anticipate what you're going to do next year. It's very difficult for us to do that in our offices because we have so many deadlines. It's all we can do to get the answer out that's due next week, and the brief that's due the week after that.

California now has 150 active cases pending against the state board and the state department. When you've got that kind of a work load, it's difficult to sit back and worry about what you're going to do next year. But, luckily there are some people who are able to do that. We hope that you get some of that thinking out of this session on technology. We obviously don't have the answers for you. We're not going to be able to give you a list of things that you can go back and do that will guarantee you will not get sued over the implementation of computer technology in your state. Maybe, if we're lucky, we can help identify some of the questions. Then, we can start thinking in the next year or so about some of the answers.

OVERVIEW: THE NATURE OF INFORMATION TECHNOLOGY AND ITS APPLICATION TO EDUCATION

by

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I will start with the usual disclaimer that the opinions I express are mine and not those of the Congress or the Office of Technology Assessment (OTA). On the other hand, in this case there's one exception. Last fall, OTA published a report, "A Major Assessment on the Impact of Information Technology in American Education." This report focused on technology's impact on federal education policy. It was a strategic document written for Congress to describe where technology is going and where the issues are at the federal level. It was not a tactical report that looked in depth at particular legislative options.

When we started the study, education was the last possible interest in a Congress focusing on the budget and the economy. Now education has become a major rallying cry, and both political parties are vying with each other to see who can get in front on the issues. There is particular interest in science and math education and in the use of technology for education. Therefore, some of the things I will mention are in fact findings of the agency and recommendations made to the Congress.

Technology's Impact on Institutions

I will first make a couple of very general comments about technology and its impact on institutions. The popular press and some scholarly writings on technology assessment state that technology itself has an impact on institutions. That's not precisely so. It's the way technology is used and instituted that has effects. In order to understand what the technology's impacts are, you have to think of how the decisions are made to implement it; how it's implemented; what organizational structures are set up to operate it, etc. Unless you move beyond bare descriptions of hardware into these larger concepts, it's not really possible to think about the impacts of technology.

Second, I was asked to focus on what's going on now and not get into blue sky futuristic projections. (Probably in Congressional terms, OTA is futuristic; we look out five or ten years. However, in the futurist community, OTA is considered very conservative and dull.)

The trouble with any kind of a technological revolution or any kind of social change is that it stretches institutions out like a rubber band. It starts moving one end while staying in place at the other. In the past, education went along for a hundred years and settled down into pretty standard forms, so that schools in California looked like schools in Illinois that looked like schools in Maryland. Teacher education looks the same everywhere, and schools basically operate in the same way. When you start having technological changes injected into this, these similarities no longer hold true. What is futuristic for some schools is old stuff for other schools. The microcomputer is a new thing in some areas, and in other areas it has been around for a couple of years; now those areas are interested in two-way cable. Some schools are already planning to form their own consortiums to buy satellite systems and share video programming. In this environment, it becomes much harder to determine what are future technologies or applications and what are current. I am probably going to sound a little on the future edge, but what we tried to tell Congress was that, in fact, these things are being done in various places even though they are not being done everywhere in education.

I don't think you could have picked a more difficult area to examine from a preventive law standpoint. In the first place, technology is changing radically on many different fronts. It's not just personal computers that are changing. The technology is changing across the board; and society is changing. We told Congress that, on the whole, the automation of our economy will shift emphasis from manufacturing to the service sectors and the highly automated service industries. This will change what society wants out of education. In some case, it will change who the clients that need education are, when they need it, what they need to learn, and even who provides it. The schools are no longer the only actors in the education system. (Some historians of education argue that schools never were the only educators in society.)

The whole regulatory and industry structure for telecommunications is also changing. We do not know what the shape of that industry will be or what the nature of the regulatory environment will be in a few years. It's hard to predict exactly what is going to happen. As I suggested, there are a number of bills now in Congress and at the state level concerning technology in education. It's hard to tell what will happen; whether it's a flash in the pan; whether they are entered for the purpose of political rhetoric; or whether, in fact, they are going to somehow modify the whole nature of education policy.

And finally, when you talk about the legal impacts of information technology, you are in the middle of an area of law that is itself undefined. Some of the issues concerned with protecting information that is now being transmitted over new media are unknown territory for lawyers in general. Therefore, it is not an easy task that you've set before you. Although I am neither an educator nor a lawyer, I will attempt to discuss some of the issues.

Technology Trends

Computer Hardware Trends

The main point is not that you need to understand the nature of all these technologies, but that you need to understand the really broad front along which things are taking place and the interconnectedness of technologies. The basic trends are really in two areas. In micro-electronics or computer technology, the hardware is becoming faster, cheaper, and smaller. A side effect is that it's becoming mass produced. I first learned about computers when they were custom wired and custom designed. Each computer had its own unique characteristic. Now they are stamped out like cookies in factories. They are available to the masses, and useable to the non-experts.

I ran a computer center in the late 1960's and bought a million dollar computer. I would say that now the accessibility of computer technology to the average person is orders of magnitude higher than it was at that time. I administered a priesthood that somehow mediated between the students, the faculty, and the technology that we had. It was extraordinarily complex. Now, my two daughters use a computer in my house, and once in a while they come to me with a question on how to use it. They bring up systems, write programs, and play with it. Neither one of them is a technological wizard. They are not particularly interested in computers except when they need to get some work done for school.

Technology didn't move along at one level, and then suddenly three years ago jump to another level with the advent of personal computers like Apple.

There has been a steady trend, and it's continuing. The equivalent of an Apple computer two or three years from now will be ten times as powerful and cheaper. This trend is going to continue in the perceivable future. Technologists don't yet see any fundamental limit to these improvements. Applications that may seem futuristic in terms of cost and effectiveness are only a few years from becoming really feasible.

Computer Software Trends

When I first started running computer centers, the common practice was to hire a bunch of programmers and program the applications that you wanted done. Now there is an independent market place for computer software. That means that anybody who uses a computer must now deal not only with a hardware manufacturer but also with software manufactures.

Computer Networks and Communications

In the communications area, we've had increased capacity of data communications, lower prices, lower costs, and easier interfacing. I keep going back to indicate how these changes are taking place. We funded a number of studies to tie small colleges together into regional networks to get computing to the students on campus. At that time, we had to go out as project directors and teach the phone companies how to hook up these computers and how to install modems. Now, it's an automatic process. Anybody who has an Apple can go to a local computer store and buy a modem and hook it up to the phone company. The interface between various hardware is much more flexible. It's becoming increasingly so. So, the ease with which computers can be networked together and one can access services remotely is much greater.

Telecommunication Deregulation

Deregulation is another important point that you need to deal with. The principal impact of deregulation is that you are now consumers in a real telecommunications market place, and you are going to have to behave like consumers. That is going to present some extraordinary problems. Despite all the disadvantages that economists and lawyers propose for a regulated monoply such as AT&T, one advantage was that you could say "wire me up," and they would bring in phones and stretch wires around the campus or between the schools. They would provide you with a certain catalog of services. If something went wrong, you would call them on the phone and say, "fix it." That's no longer the case. Now you are going to find different competitive firms offering long distance, medium distance, and even local distribution service. You are going to be in the position of buying your own local telephone system within a school district. That may pose problems and an additional layer of difficulty.

Integrated Systems

Finally, the preferred general trend is the integration of all this technology together -- computers, telecommunications, and information services. It's not just a matter of choosing between computer or cable hookup, but hooking your computer to the cable channel, and hooking that in turn to a videodisc to form an integrated educational system.

Personal Computers

With specific technologies, all the schools right now are focused on personal computers. That also seems to be the political focus in Washington. The growth of the use of the microcomputer in the school has been extraordinary, from 50,000 just a few years ago to maybe a quarter of a million this year, to a million predicted in a year or two. What the schools do with all these things is a different kind of question. In fact, I urge you all to pick up Wall Street Journal today to get one view of the impact. It's a story about a school district in Florida. Florida has a state-wide program of putting computers in schools. The school district found itself with 900 Apple computers, no software, and no trained teachers.

Large Computers

There are also changes at the other end. The growth of large computers is increasing and in the future you may have "super-computers" that provide you with other kinds of opportunities. Technologists like to propose a choice. In the future will educational computing mean a small computer in the classroom, or will it mean a terminal connected to a big computer? In fact, what it probably means is a small computer in the classroom connected remotely to a large computer that provides other kinds of services.

Video Cassette Recorders

Certainly VCR's or video cassette recorders have already made some sort of impact in the schools. Videodiscs may or may not survive as reliable technology, but they have a lot of attractiveness to them when they connect with a small computer to display individual frames and branch through the information obtained on the videodiscs. Video cassette recorders and [illegible]scs are being used in proprietary education. They are being used in univers[illegible]ies, and for other purposes such as data storage. The principal driving force for the videodiscs going into the home may be this most recent announcement of the audio discs by

Sony. Right now it costs about $500, but it will probably go down to $200 or $300. But that will bring optical technology into the home.

Cable Systems and Cellular Radio

More and more cable franchises are setting aside channels for exclusive use by school districts. In some areas, school districts are taking part in franchise agreements. In other areas, districts are having it dumped into their laps without quite knowing what to do with it. Either way, participation in local cable is happening.

I don't know if cellular radio technology is in the educational realm, but I'll mention it. Some people anticipate that over the next ten years the telephone is going to be removed from the cord through the technology called cellular radio, that will make portable telephone almost as easy and almost as cheap as the wired telephone. Most of the proposals I've seen for cellular radio do not concern education. Low powered television and even microwave data links are technologies that right now are principally of interest to the colleges and junior colleges. At least they seem to be the most active players, but I would suspect the public schools (K-12) will be getting into them within the next decade.

The On-Line Information Service Industry

Finally, I want to talk about a class of technologies that are actually the next step up from electronics. The information industry that is locating software represents one of them. On-line information services have grown from about a billion dollars this last year to a projected five or six billion dollars in 1985. These services provide access to electronic information data bases and software packages that allow you to easily browse through them and use the education research. Certainly the lawyers here are aware that the legal community was one of the first to go on-line for professional research. Medicine, and I would assume education, are going to be dealing more and more with these purveyors of information services and products.

Applications

Computer Programming Instructions

There is a hierarchy of educational applications that these various technologies map into. In the first place, computers are the subject of instruction. That is the principal motivation behind schools getting computers. There is also interest in computers as educational devices, but the reason parents and PTA's and students and teachers are trying to bring this technology into the schools is to teach children how to program. There seems to be a general consensus in our society that young people will need to know programming as a basic skill. Now, we can debate about that because simply teaching everybody how to program is not necessarily a response to the kinds of social trends we are experiencing.

Educational T.V.

The second layer is what we call passive instruction and is exemplified by the use of educational TV, videodiscs, and tapes, and even some forms of computer software. (It's had a bad rap, although research going back into the fifties and sixties shows [illegible] can learn from watching TV as well as from a live lecture.) Passive instruction has been used and the use continues to grow. Just this year two new nation-wide university networks for instructional television have formed to produce and distribute educational material.

Interactive Systems

Interactive systems are the third category. In interactive systems, the medium adapts itself to the particular instructional path of the student. Broadcast goes one to many; interactive is one to one. The course of instruction adapts individually to the pattern of use. Any kind of computer, computer terminals, videodiscs, or two-way cable can provide interactive adaptive instruction. Again, professional research dating back to some of the early Skinner work in the 40's has shown that this works.

Simulation Experiments

Simulation creates an environment. A student can go step by step through a chemistry experiment with simulated equipment and get realistic results with the Plato system. There are many other experiments in simulating laboratories and instruments. Similar simulation effort[illegible] taking place in the social fields such as economics, business, social science, and so on.

Simulation experiments are particularly important in the military and in graduate school because real instruments can cost more than a million dollars. Simulations are becoming important even in high schools and the lower grades to extend more sophisticated chemistry and physics instruction.

Flight simulators are now being used by the Air Force for training pilots. The realism with which computers can simulate an event and your position in it, like flying a plane, driving a car, or whatever, is really quite extraordinary. Right now, the price of such systems is very high. One can expect that they'll drop rapidly as well as substantially.

On-Line Information Systems

One of the things we learned in school was how to get information; how to get at it; how to use it; and how to manipulate it. These subjects were included by English teachers in library research technique classes. Students were sent off to the library to write a scholarly paper based on their knowledge of using the card catalog, finding a book, etc.

These types of library research skills will not be the scholarly tools of the future. Researchers will use on-line data bases, on-line card catalogues, and electronic information systems. This transformation of the library into an electronic information base is not that far away. It's taking place right now in universities and colleges and isn't very far in the future for K-12. If you think you're teaching the kids research techniques, in a library filled with books but nothing else, you're not really preparing them for college anymore.

New Clients and Continuing Education

Technology offers a way to extend education to persons who have never had it in our system before. Some of the new clients are the home-bound, the handicapped, the elderly, the people with language barriers, etc.

Continuing education will become increasingly important as the economy automates. Steel workers, engineers, and other workers just don't come back to school and sit in a classroom. They work. We need to distribute education to them as well.

Testing and Diagnosis

Finally, in testing and diagnosis, there's research going on in the use of computers and interactive systems to measure the learning skills and conceptual problems of students. For instance, there's a piece of software that measures nearly eighty different reading skills by testing the student and then prescribes particular remedial instruction.

When I was a math teacher, I would give a problem, and its answer was either right or wrong. Now it's possible, through diagnostic systems, to find out why a student got it wrong, and precisely what it was that he didn't understand. The old crutch that an error was due to laziness or carelessness is no longer available.

There are some interesting implications with the increased use of computers for testing and diagnosis. For instance, one group is working on an interactive testing system that, with between eight-to-ten questions, can come within one percent of the score on the Scholastic Aptitude Tests (SATs). Instead of taking an entire battery of tests that can take a whole day, students can answer only a few questions. This system works because it is interactive -- the answer to the first question determines what the next question will be, determines what the next question will be, and so on. On the other hand, this means that every student essentially gets a different test.

Testers are worried about the implications of this type of system. In preventive law, this application may raise a number of possible legal challenges. And yet, according to statistics and patterns of testing, it would be highly accurate. Our society may not quite be ready for an eight-to-ten question test being used to determine whether or not our children get into Princeton. On the other hand, these techniques open the door for much more sophisticated testing and much more careful, individualized testing. Our educational system can become more tailored to the individual needs of students instead of the current system of mass production.

Cost and Effectiveness

Although the Office of Technology Assessment told the Congress that cost effectiveness is not a very useful issue, I'd like to address it briefly. Laboratory tests of the new technologies and most of the research literature says, "yes," it works. But, the literature on cost-effectiveness is not too useful because it's usually comparing experimental systems with existing techniques.

For example, a valid effectiveness test would be difficult for the original Plato system because it was an experimental system that cost millions and millions of dollars to put together. So, it doesn't make any sense to take the cost of Plato and compare it with the cost of instruction in an operating school. Besides, costs are shifting so rapidly that it doesn't mean anything. By the time you publish the cost effectiveness tests, the costs figures are out of date.

The fact is, in general, the new technologies work. But for an educational institution, that's not the whole question. Educators do not want to know if it works theoretically, but whether that piece of software, on that piece of equipment, in that room, administered by that teacher, given to that student, works. And that's quite a different question.

There's a consensus among experts that most of the software now on the market is junk -- marginally useful, at best. So, in fact, if you ask whether most of the stuff on the market is useful, or if it's effective, the answer is often "no." Much software stops running, or doesn't teach the child anything, or insults him and drives him away from the computer, or frustrates him. So yes, it's a theoretically effective medium. No, the market doesn't produce very effective software, yet. Perhaps this isn't any different from the problem faced with textbooks. I don't know.

Legal Issues

Let me finish by pointing out what I think are the four areas of legal issues that we face. One is that schools of all levels are going to be increasingly involved in operating telecommunications systems and therefore are going to be tied up more and more with state and federal regulatory matters. This even applies in the case of cable, because cable is often franchised by a city or county. Legal issues can get more and more entangled.

Second, we have the problems of procurement of high technology. Computers and computer software are still this extraordinarily complicated technology. And, it is an area that requires very specific legal expertise -- how to contract for it, and how to buy it, particularily in the software area.

Third, we have the problem that we're entering a society in which information is the "stuff" of value. The information marketplace is growing along with a range of problems that are also evolving . One problem is the copyright, the protection of intellectual property. Another is the problem of computer crime. There have already been cases where students have used school computer systems to break into corporate computer systems and have gotten into all kinds of mischief. In my opinion, I'm afraid we're only in the early stages of this wave as the kids get smarter and smarter about the technology.

Another problem in considering information as "stuff" of value is the whole problem of privacy. This includes the transfer of student records from one medium to another medium, electronic storage, and many of the applications I've mentioned. A lot of these applications collect more information about the students and information which is more sensitive than we had before.

information that probes rather deeply into a student's psychological approaches to learning and to the world will be available. This information will not so much be concerned with whether they're nuts or not, but with strategies and information that can illustrate their value systems and how they approach life. A lot more information is going to be collected just as a "matter of course" by this technology. And it's going to be a serious problem what to do with it.

And finally, I'll go back to that early comment I made about the rubberband -- about how some schools are going to provide technological advances and some schools are not. We are going to have an enormous variety of teaching styles, raising tough questions of equity. For example, an article in the Wall Street Journal discusses whether cramming by computer for the pre-college scholastic apptitude tests (SATs) works. One vendor now posts a money-back guarantee that its $300 set of SAT coaching programs will add 70 points to a score. If such software does work, it can raise fears that the poor face failure in college.

The problem is that computer technology is effective and is going to be expensive. It will become available in the home, or through proprietary schools, or street corner computer literacy schools, if not through the public schools. This raises enormous questions about equity and access not only to higher education but access to the economic system of this country.

So much for my overview on ethics. I apologize for the rather sweeping nature of it. One major point I wanted to make was that this is an extraordinarily complex and broad subject that we have chosen to grapple with today at the Institute on Preventive Law and Technology.

NEGOTIATING CONTRACTS FOR THE ACQUISITION OF COMPUTER HARDWARE AND SOFTWARE BY STATE EDUCATION AGENCIES
AND
SOME COMMENTS ON COPYRIGHT AND INTELLECTUAL PROPERTY RIGHTS

by

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Contract Problems

My talk will focus on computer contract problems. So far, today's discussions have been about equal access to technology and other difficult issues which may not appear until somewhere down the line. This talk is on the opposite end of the spectrum; it is about dollars and opportunities being lost, about boards hiring and firing superintendents, or in the extreme, about boards being voted out of office because of a public perception that the schools' financial or educational management was mishandled. So I would urge you to wade through some of this with me.

Different people may have different needs in this area. While some of you may never have to touch or read anything resembling a contract, you may work around people who will need some kind of input once it comes time to buy equipment or software. At present, your group may only be facing the fairly uncomplicated early decisions relating to buying a few micro-computers for your school systems; but, as Weingarten and Griffin have both indicated, system integration is the wave of the future. We're going to see micro's connected to other micro's and computers which are based at the school site connected to micro's located in the students' homes, or even connected to satellite communications devices. These things may seem a little bit abstract now, but there are already a few school districts with programs almost this advanced.

I've given you the handout (see Appendix B) because there is no way we could absorb all of this material in such a short time. You might want to follow along just to see where I am on the outline. I do have a copyright notice, which our "fancy high tech" laser printer inexplicably put at the top of the third page instead of the bottom of the first page. Although I have a fairly loose concept of the fair use doctrine when I'm advising a school client, I have a fairly tight concept of it when it's my copyright.

First, I'm going to talk about contracts. Then, I'm going to talk about intellectual property issues such as copyright and patents. Right now, on a day-to-day basis, the copyright issues are perhaps not as urgent a matter of concern as these contract problems are (we're starting to notice that computer contract problems are coming up in almost all of our client school districts). With contracts, if you miss something, you can make a blunder that could become very expensive later on down the line. My discussion of contract issues is broken up into two major areas -- pre-negotiation principles, and items you will need to bargain for when you are actually negotiating.

Determining Your Agency Needs

The ultimate principle under pre-negotiating principles is to determine your agency needs at the very outset. Then, and only then, decide on the appropriate types and brands of equipment, and the agency's strategies and schedules for designing and implementing the proposed system. So many times, the procurement process happens in exactly the opposite way; people are attracted to a piece of equipment, and they just go ahead and buy it, then start worrying about how they're going to fit it in with their overall program in the school or the agency. Only later do they start wondering, "Why in the world did we buy this thing? There were any number of other products out on the market which might have satisfied our needs." So one thing that we really insist that our clients do is to sit down and take the time to prepare a thorough requirements analysis. Stop and ask yourself what you really want to achieve with this equipment. Is the computer you're talking about really an improvement over what you already have, or is it merely some kind of baroque encrustation on a system that works but isn't quite as sexy? You have to get your in-house technical people involved at this initial planning stage in order to keep you from going off on tangents that aren't technically feasible or economical. You also need to understand your own people because sometimes the data processing people are off in their own little world. I'm not going to suggest that they're anthrophobic, but some of them are not used to dealing with management-type issues or with decision making. It can be very instructive for both parts of your team to get the computer personnel involved right away.

If necessary, get a consultant involved in the major decisions. This approach is often necessary when contemplating a more sophisticated, elaborate, or developmental system. If you are going to use a consultant though, beware of their inherent tendency to push products that they have had a role in developing or in which they have some kind of vested interest. Consultants are most familiar with their own systems. I feel it is extremely important to use a consultant who is a truly neutral third party and who doesn't get a commission on the sales on any equipment or software that they convince you to buy.

I'm going to periodically mention items that I have picked up in the computer press or law suits. Recently, a very instructive consultant nightmare was reported in Computerworld magazine. A California county government was putting together a management and information system for its budget office. They used consultants who talked them into buying not only a program written by the consultants, but a program written in a language that the consultants had devised. The consultants got the county to feel that this programming language was really the wave of the future, and this program was so custom-tailored to their needs that it was just a godsend. In reality, though, after investing over $3,000,000 in developing software, the county found out that the system did not work. Not only that, to add insult to injury, the county was completely dependent upon the consultants because no one else in the country really knew the programming language.

That's the type of project that causes administrators to lose their jobs. The county found itself asking later on, "Why did we do this?" It's the kind of question that comes up two years later when it's too late to really do anything about it. So be on the look out for incestuous relationships between the consultants and the products that they are recommending that you buy.

The city of Pittsburgh bought a major software package from one of the "Big Eight" accounting firms. They got well into the project. Then, in the words of their own staff, "By the middle of the first quarter of actual operation, it became obvious that there were serious problems with the system." Two months after the software was installed, the situation had become so serious that the city controller's office was forced to borrow some of the county's information processing capacity and to utilize expensive outside service bureaus (something the city had never done before), since with their old system they always had the capacity to do it themselves. City employees were asked to work 14-hour days to keep city records up to date. Finally, the city negotiated an out-of-court settlement, wherein the city was paid one million dollars: $530,000 of that was reimbursement for money which had already been paid to the consultants for the program which did not work; $230,000 was strictly reimbursement for expenses the city had had to undertake in only a few months to try to work around; and another $76,000 was paid for actual damages occurring when things didn't get fixed on time after the whole data processing system collapsed.

I don't want to be a purveyor of gloom and doom, but consultants should be looked at very carefully to make sure that you understand their relationship to the products and suppliers they will be recommending. While some of their systems work perfectly, others have been known to turn into administrative nightmares.

Drafting Detailed Performance Specifications

The second step, with a major acquisition, is to draft detailed performance specifications. If you're considering relatively simple off-the-shelf type goods, this document is not necessary, and the internal requirements analysis performed under the first step will usually suffice. A requirements analysis is just to make you sit down and think out what you really need. Performance specifications, on the other hand, are really between you and the seller. You're saying, "This is exactly what we expect out of you, and if it doesn't perform according to these specificiations, we're going to come after you. We're going to have a definite contract on paper so we can point out, 'Look, you failed here, here, here and here. What are you going to do about it?'"

Again, for small scale or off-the-shelf products, it is not feasible to draft performance specifications. But if you're considering the purchase of something complex, or something which requires a lot of custom modification or invention and development, performance "specs" are advisable. This recommendation is particularly appropriate if the product is in the experimental or developmental stages. We're finding a number of our larger school district or college clients are being approached to serve as a pilot project. Contractors will propose an enticing deal, and they'll say, "Look, if we make this work for you, and it works for all other states or districts, we'll give you a discount, or some kind of credit or royalty every time we sell it to another client, so that your actual cost may eventually be substantially reduced." Again, when considering the purchase of products which presently exist only in people's minds, performance specifications may be absolutely necessary.

In situations where the product to be custom designed and even the buyers needs are abstract and ill-formed, it may be advisable to break the procurement process into two phases. Phase 1, which is a separate contract, will produce the performance specifications for the desired product. In other words, you hire someone to devise specifications for the desired system. Then the school system or the agency can be free at the end of Phase 1 to take this set of "specs" and say, "Who wants to build this for us?" Phase 2, then, is the actual design and implementation of the system.

In purchasing custom products, it can be very risky to try and do everything in one big contract. In the very beginning, the buyer doesn't know what is wanted or what kind of detailed specifications will help obtain the devices in software that are needed. I can't overemphasize that custom software development is a particularly risky area. If hardware doesn't suit your needs, at least you can sell it to somebody. A given item of hardware will probably suit somebody's needs. By contrast, if software was developed just for you, it may have no commercial value to anyone else anywhere else. Not only can you not use it, but it lacks salvage value. All you have is a bunch of stacks of paper that don't make any sense to anybody. In summary, I think that you have to be wary when you're negotiating software development contracts; find out whether the program is actually an experimental or new type of program, and if so, try to break the contract up into two-phases.

Also, please beware when people come and say "This software worked great when we installed it in Tennessee or Oklahoma," if you happen to be in Texas or Mississippi. For example, the reporting requirements for other states might be completely different, and may have absolutely no relevance to the reports your state statutes require of your school districts. So when they say it works like a breeze, and that you can just plug it in and you'll be going tomorrow, give some thought to the fact that as educational institutions, we're all creatures of state law, and that these laws can be very eccentric. Each state has it's own quirks. Such quirks can render software developed for one state useless in another.

Beta-Site Risks

There are a few other miscellaneous pre-contractual issues. I've already alluded to the purely experimental venture that a vendor may propose. In computer industry jargon, it's called being a "beta-site." ("Alpha testing" goes on at the company). Beta is when a vendor has a new product which has worked fine under their perfect Pentagon-type testing situations, i.e., on a totally clear day in the desert without any wind with the tank painted bright red. Now they want to see if it works in the hills and vales of the Alps in the winter. So they find some poor school district or state agency that says "Me, I'll do it," because the contractor will give them a break on the price. Beta-test arrangements may be cheaper, but be aware, as I mentioned earlier, that they may involve considerable additional risk because of the experimental nature of the program.

Pittsburgh probably didn't fully appreciate this risk. Pittsburgh was a beta-site for the "Big Eight" accounting firm's fancy new accounting system discussed earlier. Beta-site agreements include provisions that disclaim almost every warranty on the part of the vendor. They say, "We're giving you a price break, and what you're doing in return is assuming some of the risk that this stuff doesn't work." Pittsburgh, because of its size (and because of the PR problems presented by such a huge disabled client city) actually forced that one million dollar settlement. What I also found, by looking a little deeper, is that the state of Kentucky bought the same system as a beta-site purchaser. It was contractually entitled to merely receive reimbursement of whatever money they had already paid over, even though its losses were considerably greater than that. The same software caused a city in Massachussetts to suffer a double whammy, as the system failure precipitated a bout of political turmoil. Having already dismantled its previous system, the city was stuck with a white elephant that didn't work. Nevertheless, because of its beta agreement, the city had no adequate contractual remedies against the seller of the software.

Getting the Agency's Attorney Involved Early-On

I advise getting the agency or school district attorney involved in the acquisition process before the negotiations actually commence. Whether the school district or the agency knows it, the vendor has, in one way or another, involved its attorney from the very beginning. The vendor's attorney has put together ironclad forms for contracts. Sometimes a client won't even start talking to its legal counsel until all these people are flying in from

Massachusetts and Palo Alto to sign final contracts that afternoon. The school's attorney will casually be asked, "Oh, by the way, is this 400 page form contract all right?" By that time it's very difficult to get the other parties to change the contracts. By contrast, a little bit of nudging of a computer hardware or software sales person early on can really result in a contract that is much more favorable to the school district or to the agency. If you wait too long, positions jell and are embedded in concrete, and the vendor becomes unwilling to negotiate about items which could have been modified if you had mentioned it a couple of months earlier.

If you are an attorney called in just prior to negotiation, my advice is to gird up your loins and throw yourself into the middle of it, and be willing to administer the ice water treatment to administrators who may be exhibiting signs of computer euphoria. One systems manager has written that, "Top managers are the most likely to be seduced by the hardware itself because they will probably not be involved in evaluating the operating details of the system. They are also the most likely to overestimate and be over sold on its capabilities." When you begin seeing signs of this euphoria, it's time for the ice water treatment. Start saying, "Well, what if this happens? What if that happens?" When you first start throwing out those "what if's", you encounter a tremendous amount of administrative hostility. They start going, "Wait a minute - this is our deal; this system is going to revolutionize the way that we teach our students, the way we administer our registration process, etc." But if you keep mentioning the "what if's," eventually the administrators may start to realize that some of those "what if's" can occur.

One of our college clients had been friendly with me and really seemed to like the idea of having us around as advisors. But the client also looked at attorneys in general as being potential deal-breakers and naysayers. After being called in quite late in the negotiating process involving a large custom software contract, I started asking "What if you get in the middle of this thing, and you find yourself totally committed to the program, then something goes wrong with the company?" The vendor was a good company, but still a fairly small company. I questioned the company officials about what would happen if some of their best people moved away, or something physically happened to these key people, leaving our client stuck in a huge contract with a group that's only batting at about one-third the average that they had been a couple of months before? The administrators kept saying "No, you don't understand, it's a stable company -- look at all these resumes they've got. They've been here for years." Finally, two days before we were scheduled to sign the contract, the vendor finally, grudgingly, agreed to insert a clause that if a specified group of people ceased to be active employees, or if there was a reasonable perception that the quality of the software supplier's staff was changing for the worse, then the college would be able to back out. To be honest, the biggest part was getting our client to ask for it, because they felt I was insulting the vendor's staff whom they "loved like brothers" by that time.

On Sunday, while we were talking, the president, the executive vice-president, and two of the regional service managers of this company were on the president's yacht on a lake outside of the company's home city. In what can only be described as a freak accident, the yacht was hit by a private plane. One person was killed, and two people were seriously injured. The accident didn't really involve the people that we would be dealing with because the people that we would actually have to work with were not injured. But on Monday I did have a somewhat humbled client and vendor. So, in summary, realize that some of these "what if's" simply must be considered, especially when you're dealing with smaller vendors. If you're dealing with IBM, you know that they've got about 50 people who will stand in and report for duty as soon as someone else falls. But with smaller groups, the implications of key staff turnover should be considered.

There's a wonderful law in the computer field called Clark's Third Law. It reads, "Any sufficiently advanced technology is indistinguishable from magic." I think this phenomenon is reflected in the names of computer companies, especially some of the California groups, with names like "Oracle" and "Icarus." Administrators can really get caught up with the "razzle-dazzle" of technology. You have to be able, as the attorney, the neutral third party, to protect the administrator or the agency. The agencies or school districts have to depend on you to have the courage to throw a bit of cold water on some admittedly very exciting plans. But you do have to be careful because you don't want to be such an ogre that everyone walks away or stops listening to you. And, by the way, I'm not saying that this is just the lawyer's role; administrators have to do this too.

Later on I'll give you my seven bewares. (see Appendix B.) But, just as a preview, one of the bewares is, "Beware of your own data processing people." There are several types of staff computer people. One is the "oh my god, this is great" type, the one that will love you if only you buy everything new that comes along. They're just raring to get their hands on something that's really high-tech because they might envy some of their brethern who are working for big corporations and have these huge data processing equipment budgets. So they want something really glossy. You will also find the "it won't work because I wasn't trained on it" type. That syndrome can present a very real problem, and can be found in people who are computer folks, but who were trained in earlier technologies in the computer area.

Then there is the data processing and administrative type you have to watch out for -- the so-called "Pentagon Theory of Sponsorship." A project is undertaken, and somehow they take it to heart that it is their project. We all know administrators like this. It is a matter of turf. This is their idea, and they'll see it through, and nobody is going to tell them they are making a mistake. They start ramming the proposal through at every level of the external and internal political process. The tell-tale sign of this particular syndrome is when somebody has a rabid and uncritical need to get a particular program into effect. At some point the crusade can become almost a religious obsession.

Consider All State Law Requirements

Before establishing contact with potential vendors, insure that the requirements of your state laws have been fully considered. Bid law is the big one, obviously. The single-source Requests for Proposals (i.e., when you draw your request for bids so narrowly that only one company can conceivably comply with it) is subject to frequent challenge. We've recently seen one in Texas that was overturned on that basis. Also watch out for the situation where the vendor you really prefer responds to your bids in a way that isn't responsive. You say you want a green cap, and they say "Here's a proposal for our terrific blue cap," and everybody is so impressed with this vendor that you reply, "Great, we'll take your green cap," forgetting that they actually said they'd give you a blue cap. Later on, of course, they say, "But we told you all along that we'd give you a blue cap -- just check our response to your request for proposal. By the way, a green cap will cost another $100,000." Make sure that they actually respond; your own data processing and technical people can be of great help in wading through all those horrible piles of documents that evolve in the course of these kinds of acquisitions.

Incidentally, my little scenario may also open you up to challenges by disappointed bidders who argue, "We had a responsive bid; how come you gave it to the ones with the defective bid?" Beware of bid law. The computer area is a very competitive field. These people like to sell hardware and software, and they'll watch how closely you follow bid law. If they start losing a bunch of bids, they begin to worry about ripple effects within the lucrative public sector, and may decide to fight in order to preserve their reputations.

In the bidding area, thoroughly check out the bidders who respond. Don't treat a computer contract like an agreement to purchase a bunch of 1983 Buicks. You know what Buick is, so you take a lot for granted. How different can computer dealers be? Well, software and hardware vendors can be very different. Make them come up with extensive resumes listing precisely who they've installed systems for and exactly how those systems compare with what you're asking for. Get names and addresses of contact people, and call them up. If they've had bad experiences with that supplier, chances are they'll tell you about it. We have found districts in other states to be very open to giving some very practical advice such as avoiding the particular contractor like the plague, or, perhaps, how to tailor a contract to avoid some of the problems they've encountered with the contractor.

In addition to bidding regulations, some states have constitutional requirements governing how public bodies pay for major purchases. In Texas we have a Reconstruction Era provision that restricts school boards and other public entities from committing a future board to pay out money unless it simultaneously sets up a sinking fund or other mechanism which will insure that the necessary money will be there (which is obviously not feasible for most normal purchases). However, if you need a $250,000 computer, it can be very appealing to try to spread the payments out over a few fiscal years.

Some of your states have constitutional restrictions that are tough to get around and require some creative contract drafting. What we occasionally do is provide elaborate escape provisions in long term contracts, allowing the school districts to walk away from the equipment unless the board renews the contract each fiscal year. Vendors don't like the uncertainty, but they will often accept it in the final analysis.

There may be some other statutory or constitutional considerations peculiar to your state. For example, I'm told that some states don't permit the purchase of a perpetual license, such as is commonly used in the software area. These states require that you be able to buy the software outright.

I'd like to warn you about inadequate planning. From a hardware and software standpoint, you can't think of your own group merely in a vacuum. You need to look into what the other agencies or public entities in your area are getting into so that you can be able to communicate later on if it's necessary. I recently read about an administration which committed to a seven million dollar software and hardware development program using a particular brand of hardware. However, every other state agency that they ultimately needed to communicate with used other equipment. As it got farther and farther down the line, they kept having to put money into this program to try to make it compatible with the other agencies that they increasingly needed to communicate with. One classic plaintive comment from the commissioner of this particular agency was, "We kept waiting for this magic box that was supposed to allow our machines to talk to each other... and it never came." The problem has now resulted in the cancellation of a $7,000,000 system contract. Tremendous amounts of administrative resources are going to be consumed by this debacle as they start from ground zero, building another new system which will be compatible with the other agencies.

Do some planning. Don't depend on those magic boxes to appear. Also, don't get caught in the middle when computer companies come out with new "state-of-the-art" products and begin phasing out your product line, making your systems obsolete and incompatible with newer products. Beware of these shifting sands. A little bit of planning and hard questioning regarding the vendor's long-term product strategy can definitely help in this area. Another danger area is that, regardless of what the hardware salesmen tell you, the software written for one machine won't necessarily work when you plug it into another. If you've spent a lot of time and money creating all of your data base and all the information that makes your operation run, and then buy a new machine which won't operate your software, you can be faced with an enormous problem. You have to modify your ways of doing business and reprogram large amounts of data. Sometimes it just can't be done without tremendous outlays of resources. While the problem may be unavoidable, you should at least endeavor to determine whether it is likely to occur with a given new system, and, if possible, get the vendor to shoulder some of the risk that reprogramming doesn't turn out to be as simple as everyone had expected.

Contractual Terms

There are a number of specific contractual terms which the purchaser should bargain for. I don't want to go into this too much because you can read it for yourself on my outline. These sections are very detailed and would appeal mostly to lawyers, but I want to touch on some of the high points so that the administrators can understand what their lawyers are talking about, or so they can tell their lawyers to ask the vendors about these types of negotiating points. The ultimate principle is to treat a computer contract as if it were just another substantial acquisition. Resist a natural tendency to be intimidated by your own lack of familiarity with the subject. Roll up your sleeves and bargain hard.

It's interesting to see hardcore, practical administrators develop a whole new personality when confronted with computer equipment. If we were talking about a building construction contract, they wouldn't act like that. Make yourself or your people treat computer vendors as if they were general contractors for a junior high school. As many things can go wrong with these people as can go wrong with general contractors. In a way, construction is a breeze compared to computer system design, because at least you can monitor what a general contractor is doing. If a wall falls down, it's pretty obvious to the school board. But if the administration is paralyzed because the machine is supposed to be able to do on-line data loading but it's only managing to batch-load, maybe three people in the whole county understand what you're talking about.

Documentation

Be sure you obtain proper documentation, that is, documentation that's absolutely current. This documentation should include detailed product user manuals and service manuals to help you do self-testing and to repair the system on site. This issue doesn't sound as important as it really is. Remember that a software or a program machine can be unbelievably obscure to even highly trained individuals if they don't have proper guidance materials to tell them how the thing operates. A basic principle here is to ensure that your own in-house technical personnel have a chance to review all the documentation before you execute the contract. They'll have to refer to the manuals many times a day. Also, realize that programmers and engineers (who tend to be the authors of manuals) are not known for their ability to communicate ideas to third parties. I've read some of these user manuals and they resemble the kind of instruction books you get with Japanese clock radios. Articles are dropped out, verbs are forgotten, nouns are transposed, and every other word is capitalized. Plus they use acronyms for everything.

Training Assistance and System Maintenance

The training assistance the vendor will give you is a big thing to consider. Again, if you don't have the company committed to training your people, you may become totally dependent on them, yet unable to fire them even when they botch up. System maintenance is something else you have to consider and adequately spell out in the contract. Software maintenance is a very alien concept to people. It's not exactly like adding oil to the crankcase of a car. It's very vague and abstract. A recent industry analysis shows that the average computer facility spends 50 percent of its software budget purely on maintenance of that software. Figures of 90 percent are not uncommon. You have to budget for this expense when you're deciding what you can afford. A lot of times you think, "Let's just buy it, that's the big item." For elaborate systems, the purchase price is the tip of the iceberg; software maintenance is something you simply must budget in.

There are several different types of maintenance. One is called "debugging," which is basically what it sounds like. If the thing doesn't work, you have to get some of those bugs out. It's very expensive if you don't get the vendor committed to a lot of support before the machine or software goes on-line. Get the vendor to make sure it works for you, and then worry about more traditional maintenance.

"Up-date" services are agreements to make improvements available to you at a discount as they become available later. Then there's the "traditional" maintenance, involving trouble shooting during the post-warranty operation of your system. Modifications are another big area. Who's going to pay for necessary program changes? There are some types of modifications that maybe they should pay for (such as when you find that the Tennessee reporting program doesn't put out the right kinds of reports for Texas) and some that aren't their fault (like legislative changes).

One of the big areas in the modification field is what happens to the warranty if the software's modified? Almost invariably the first contract you get handed by a software company is going to say, "You touch it, and we don't support it at all. It's your problem, baby, there's no warranty." You can sometimes get vendors to vary the language on such modifications, but be aware that the modification issue is likely to pop up at some point.

Copyright Implications in the Computer Contract

Attempt to obtain the right to duplicate the documentation materials according to your needs. If you are forced to buy duplicates, try to get the right to buy them at a special reasonable rate. The same goes for floppy discs. If you're buying software on floppy discs, and you want to use the software on 50 different micros, a lot of vendors will say that you must buy 50 different copies of the software. Make sure you have an agreement that you can use it the way you need to use it without infringing on someone's copyright. Also, if you're buying custom software, decide which of the parties will own the copyright to it. With federal agencies or grantees, this issue can be complicated because of provisions in the federal copyright act prohibiting the federal government from holding copyrights. However, nothing in the federal copyright act prohibits state agencies from copyrighting materials. So the question of ownership of the copyright, as between the agency of school district and the vendor, is probably worth discussion during the negotiations preceding custom software contracts.

Infringements are another area to consider carefully. You don't want a program that's in litigation in 20 other states. Even though you may have all the indemnity clauses in the world, it can still definitely come back to haunt you, particularly if you're contracting with a fly-by-night outfit, or a group that been through ten law suits and doesn't have any assets left. You're a public entity with a very deep pocket which may attract the attention of people whose copyrights have been infringed.

Payment Schedule and Warranty Terms

Another item to be concerned with is the payment schedule and its relationship to the warranty. Make sure you work out that payment schedule so that you don't have to pay those last installments on the product until you've accepted it, and until it works the way you thought it should work. For example, we negotiated a rather elaborate contract for a client whose exposure was very high since if the software did not perform properly, the whole scheduling, registration, and class assignment system would break down. There were tens of thousands of students who would be inconvenienced by a failure in the system. We had pages of provisions that handled every possible nightmare that could come up. But the one provision which the administrators later told me was most helpful in getting the seller to actually perform the company's duties was the simple provision that, until that software made it through the installation and warranty, the client didn't have to come up with the final payments on the contract. This was a staged payment process; the vendor knew that it wouldn't receive its profit margin until the software had truly proved itself.

A few items would be unrealistic as bargaining goals. Don't expect IBM to design a custom warranty provision for you. Some of the more reasonably scaled computer manufacturers in software design will be flexible. Even IBM can be flexible in things like the timing of the warranty, how long it lasts, and exactly when the warranty period kicks in (e.g., is it as soon as they deliver the equipment, or as soon as you've accepted the equipment?). Sometimes, even if you know the vendor is not going to accept the warranty provisions, you can attempt a bluff by acting like you don't know anything about computers and keep saying, "Well, I can't accept that." Finally, out of desperation, they may give in on one of your other points, just to get you to shut up about warranties.

Idemnity Clauses

I mentioned indemnity clauses briefly. The basic principle is that, without exception, every contract for the purchase of computer goods or services, whether it's software, hardware, or programming services, h[illegible] to have an ironclad indemity provision whereby if there are any kinds of copyright, patent, or trade secret problems out there that you don't know about, the vendors will protect you on it. Such provisions should state that the vendor will pay your legal expenses if you have to defend yourself against a third party alleging that you're using a product protected under its patent. The vendors should also have the responsibility to actually defend the lawsuit if you want them to. That way they'll have to pay their lawyers to spend their time administering the law suit, in addition to paying all of your damages in case you do get stuck. These types of indemnity clauses are absolutely non-negotiable.

Let me conclude this segment of the talk with one fundamental observation. Computer companies put a lot of resources into getting you to sign this contract. They put a lot of money into getting the bid and negotiating the contract, and now they really want you to sign. Your own leverage is probably at a peak just before the contract is signed, since they've already reached the point of no return, financially speaking. As soon as you sign it, some of their enthusiasm starts to shift to the next potential buyer, so don't hesitate to press for the concessions you need: you'll never have such focused attention again, in all probability.

Some Comments on Copyright and Intellectual Property Rights

I'm going to spend a few minutes introducing you to some relevant intellectual property concerns. We've already had an introduction to the subject during the contract discussion aspect. Some of you may intend to always remain buyers of computer equipment, so you're not as concerned about what happens if your group develops some software. But agencies and larger districts might develop or commission software which is very marketable and may decide to try to recoup some of the program and design costs by selling it to other school districts. It's the same thing the corporations do now. One of our client companies sells wire and cable and doesn't really care about computer equipment. They recently devised an inventory control system that saves them a lot of money, but it cost them $500,000 for their data processing people to design. They wanted to recoup some of that research and development cost by selling it to other similar groups.

Then there are the people who are concerned mainly about being sued because someone else has sold them something that's an infringing item. There are also those that are interested in software duplication. For such groups the major question is: "What is a 'fair use' in the software context?"

Software Patent Provisions

Let me address what is happening with the legal protection of software. (I'm not going to discuss hardware because that's not really our problem.) How does the law look at software now? I can't think of a single area in the whole ancient history of what's called intellectual property -- copyrights, patents, trademarks -- that's given the law so much of a problem as software. What is it? It's not a work of art, it's really a machine language. Software is a bunch of zeros and ones strung together in such a way that they excite a machine to respond in a desired way. Is that something that falls under a patent for a machine or a process? Is it something you could protect by trade secret, just by keeping it secret and by making everybody who has access to it sign a contract with you stating that they'll keep it secret? Or is it something that a copyright can handle? It's certainly a bizarre deviation from the things that copyright law has traditionally encountered. It's not like a book, or a work of art, or a sculpture; it's not something that you can physically perceive, or even understand if you did physically perceive. What do all the zeroes and ones mean?

The first effort was to try and get software covered by patent. In essence, a patent is a contract with the government. The government says, "You let us put this information or invention into the public domain so that everybody can read about it, and study about it, and learn from it; in return, we'll protect your monoply for 17 whole years so that everybody can use the invention only if they come through you and give you some money for your trouble." Basically a patent has always involved a device or a mechanical or chemical process. Unfortunately, while software is something that's written down, and while it may make a device operate in a certain way, it's not the normal kind of device or process that courts are used to dealing with when talking about patents. For a time, the patent office was content to issue software patents, only to have them declared invalid when challenged in court. Finally, the patent office just stopped issuing patents on software, and everybody started poking around into the idea of copyright protection. In 1981, the U. S. Supreme Court decided a patent case where the software was part of a mechanical process. The software told the machine how to analyze temperature data and pressure data in order to properly treat the rubber in the course of a rubber fabrication process. The court said, "We know what we said in our previous software patent cases but this time we really can see the software as being part of a patentable process." So they allowed the patent to stand. Now the patent office is going wild again. It's issuing patents on software which performs purely analytical tasks unrelated to a larger device or a process. The long and the short of it for our purposes today is that the state of the law of software patents is still unsettled. Some software which is part of a "process" appears to clearly be patentable; however, the type of software which educators are most likely to encounter have yet to be upheld by a court so patentable.

Copyright Provisions

Software designers are rather paranoid about patents now because they're very expensive to file and they take a lot of time to obtain (a couple of years, at least). In addition, the ping pong pattern of the legal status of software patents has really demoralized the inventors. The copyright office, in the meantime, finally started thinking, "Well, you know the constitutional provision that gives Congress the authority to promulgate copyright laws just limits us to 'writings,' and since we've accepted works like paintings and piano rolls as fitting into the category of 'writings,' maybe we can stretch the term's definition a little more in order to fit software in as well." They started granting, then courts started fitfully approving, software copyrights. Sometimes courts would overturn the copyrights, and sometimes they'd accept them, with any inconsistency no doubt at least partly attributable to the fact that the technology is so weird that the courts had a tendency to go, "I don't know what you're talking about! I don't understand this 'random access memory chip' being a writing in a constitutional sense." But now, most of the constitutional and statutory problems with the copyrights have been worked out.

You are entitled to copyright protection as soon as you invent an original work and fix it in a tangible form. You get additional protection by putting the copyright notice on it, if you're going to publish it. (Note also that you can risk losing copyright protection if you publish your work *without* the required copyright notice.) In any case, no federal registration is required for merely publishing your work with notice affixed. Federal registration, though, is very handy if your work is in a field where you think there might be a risk of others infringing and you want to be able to sue someone who's misusing your work. You can't bring a law suit on a copyright claim until you file a federal registration. For software designers, though, there's a problem. At the present time, federal registration unfortunately requires that the program itself be placed in the copyright office's public files. By contrast, when ETS obtains copyright registration, a special regulation allows them to avoid placing the SAT into a public access file. For some reason though, the regulations haven't caught up with software yet. This is something which is pressured for in Congress, and the industry would certainly like to see software designers receive the benefit of filing for copyright registration without revealing their programming secrets to everyone. But as it just hasn't happened yet, the copyright office lets designers do strange things to get around this public access requirement, like sending in mutilated pages, or sending a page of the program with a sheet of paper over the middle part of the page so that all you can see are the margins of the program.

Copyright really seems to be the way of getting protection at this point. I can see no reason why a state agency or school district shouldn't pursue copyright, particularly since such entities would tend to be less concerned with the confidentiality problem than the private sector is.

Intellectual Property Rights

There's a subsidiary issue: if you have somebody write some programs for you, who owns that software? If it's your employee, and it's done during the course of their employment, during their working days, the law considers you, the school district or the agency, to be the author of the work and it's your copyright. It gets more complicated if you're hiring a contractor to do it. Then the only way you can get the right to the copyright is either to bring that independent contractor into your sphere of influence so that he becomes functionally your employee for copyright purposes, or to get a signed contract saying, "This program is to be a work made for hire; the contractor will not own it, the school system will." That will generally do the trick. In terms of how to tell an independent contractor from an employee, the courts look at such facts as where the work is performed, how the designer is paid and whether you give him a normal paycheck that takes out social security. Other factors are whether the agency is entitled to closely supervise the work. I think those are really the key things the courts look to in determining whether the copyright is the contractor's or the employee's.

Contracts for the acquisition of computer hardware and software and copyright and intellectual property rights are all very complicated issues. The most important thing is for you to realize that these complications exist so that you will proceed carefully and cautiously.

STUDENTS' RIGHTS: PRIVACY AND EQUAL ACCESS AND TEACHERS' TRADITIONAL ROLE AND HESITANCY TO CHANGE

by

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My topic this afternoon involves problem areas concerning students' rights regarding privacy and equal access and teachers' traditional role and hesitancy to change. These problem areas all involve issues relating to the use of technology in education. I have found that there are three main areas relating to the use of technology in which problems arise: (1) the use of technology for administrative purposes, (2) the use of technology for educational purposes, and (3) teacher and personnel issues resulting from the first two uses.

Copyright Infringement

Let's first look at administrative uses of technology. One of the first problems that may arise is copyright infringement. We need to consider what the liability is of individual employees who may violate a copyright provision of some software holder. If you have a teacher who violates a copyright by copying a software package for some other purpose, your state law may give you some hints as to whether the school district is liable for that teacher's violation. In California, it's very difficult for an employee of a public entity to be liable for personal injury or property damage without the public entity also being liable. Our state law provides for indemnification of the employee by the governmental entity. This holds true even where the employee is violating specific instructions. So we could have specific instructions by the school district that "thou shalt not copy this package," but if the teacher does it anyway for purposes that tend to enhance the employment relationship, the district can be liable. What the school district could do about that, I don't know. One recourse might be to consider the violation of copyright as grounds for disciplinary action. A school district may have to take this type of approach to protect themselves from liability.

Schools are traditionally rather cavalier about copyright protections. There's a feeling that since they're using these duplicated materials for educational purposes, it's all right. Probably the owners of the copyright who would just as soon sell 25-50 copies of the Wall Street Journal would not agree to the copying of materials just because it's for educational purposes.

I think the problem of copyright violation is even more severe with software. This is true partly because, with respect to printed materials, you reach a point where it's cheaper to buy the book or another copy of the book, than it is to xerox it. However, software is not really usable by itself in little bits and pieces. You can xerox a piece of a book, or one chapter, or one article. But you can't take a little section out of a computer software package and have it usable for anything. You have to use the whole thing. The cost of building or buying a complete package is so expensive, and the cost of the disc is so cheap, that it almost encourages you to violate the copyright. This is especially true in cases where you can copy it very quickly. It's hard for anybody to know that you've actually done it. This presents the opportunity for lawyers to give in-service training in copyright law to their clients so that their clients' rather sloppy practices of violating the copyright on printed materials will not expand into this area.

I'm not sure what the law would be with respect to shared computer access programs. For example, suppose the state education department in New Mexico commissions or buys a software package for school district accounting, and they buy one copy of it. If they would buy one copy and reproduce that, one for each district in the state, it would be clear that the copyright was violated. If, however, they buy one copy, and then have a computer network that ties into the state computer, so that each district can utilize that software with their own data without buying another software package, is that a violation of the copyright, or is that a legitimate use? I suspect that the existing statutory provisions relating to copyrights really weren't designed for that problem. We're not going to have much of a definite answer until Congress decides to write something down about this.

How can the school district protect itself from that kind of liability? I suppose the administration has to go through the same kinds of warnings and things -- memorandum to staff, "Don't do this, this is a violation of law, you are subjecting us to liability and you will be punished severely if you are caught" -- as they do with printed materials. I don't know what else works, except that the first time somebody gets disciplined for doing that, it will have a very sobering effect on other people who are doing the same thing.

Illegal Access to Data

We have some administrative questions regarding illegal access of materials. In the course of coming up with some notes for this talk, we used our NEXIS computer capability and pulled out a couple of newspaper articles that are really kind of scary. In a March 7, 1983, U.P.I. story, the University of Nebraska at Omaha reported that between 2,500 and 5,000 people were gaining unauthorized access to the university main computer. In a February 23, 1983, U.P.I. story, a University of Rochester student broke into the University file and changed his grades. And a year ago, a 19-year-old freshman from Texas A&M was suspended and charged $300 for changing the grades of two students. The scary part about it is that he did this with a small home computer from his dormitory room.

The implication is that anybody with an inexpensive computer and a modem can get into almost anything he wants. I think it's only a matter of time before one of our hotshot high school students uses the school computers to rip off a million dollars by gaining access to district or state financial records and simply embezzles a substantial amount of money.

I don't know what the school district does about that. But the challenge to the students is almost insurmountable. Students who wouldn't dream of doing an hour of homework look at this as a challenge and actually succeed at it quite well. To what extent, then, is a school district liable for unauthorized access gained by their students into somebody's data bank either because they managed to supply the information the student used to do that, or because the student used the school computer terminal?

Computer Error

Another question concerns the extent to which the school is liable for incomplete or erroneous data in its own files. If students can get into the files and change their own or somebody else's grades, and the school then sends a copy of the computerized transcript to the university, and the university grants admission on the basis of these A's, to what extent is the school liable? If the school district has an errors and omissions policy, is this kind of action covered? I have an article that reports in Germany that a women killed her child on the basis of an inaccurate computerized report -- a computer error. It states that this woman was told at the time she gave birth to her son she had incurable syphilis and had passed it on to the child. She was so distraught over this information that she went home and strangled him. Later it was discovered that it was a computer error. That's certainly an extreme example of the kind of damage that could result from a school or a person giving incomplete or erroneous information due to a foul-up inherent in the mechanization.

Criminal Access

Another question that schools as computer users have to be concerned about is whether illegal access by somebody is actually a crime. The traditional crimes don't fit very well. One could argue that that is similar to a trespass by someone, as if someone came into the office and looked at records with their own eyes. That really doesn't fit very well because a person is not physically on the property. One could argue too, that it's like theft of electricity. There is a crime involved when people by-pass their electric meters and wire their house without bothering to pay for the wattage. There is, in a sense, an unauthorized use of electrical power in illegal computer access, but that is really not the essence of the offense. (There is also a theft of information, but that doesn't fit very well.) The holder of the information is not deprived of anything that he had before. Therefore, it's really incumbent upon the legislature to define this area separately if it's going to be a crime. California did make unauthorized computer access a felony. It's punishable by a $5,000 fine and five years in the state prison.

I guess one could make some analogies to the liability of the district for the misuse of records that are kept manually, or traditionally kept manually. I don't think a court would have a hard time concluding that a district has a duty to take reasonable steps to preserve the security of records and information. If there was sloppy maintenance of office personnel records in the district headquarters, and a student walked into the office and was able to look at confidential files of teachers, the district would be liable for their own negligence -- negligence in failing to secure their confidential records. The confidential nature of the records gives rise to an extra duty on the part of districts to protect that confidentiality. I don't think that duty changes much because the records are in a computerized data bank rather than manually filed in file cabinets.

There are other kinds of security precautions that a district could take. The reasonableness of security preservation depends on the circumstances. There are some steps to preserve security that are very expensive, probably overly so, and some that are fairly inexpensive. I'm not particulary conversant with what kind of security measures you can use to prevent illegal access. But some people who know more about computer capabilities than I do could give a school district that information.

Error Detection Methods

Some error detection methods are available to districts. If they choose not to avail themselves of those methods, I suspect a court would say that would constitute an element of negligence. Did the district take reasonable steps to secure their access codes? Can any student figure out the password? Were reasonable computer steps taken to prevent people from changing the data rather than just gaining access to it? Those are questions of fact, but I think a district is going to have to be able to show, based on the state of the art at that time, that they took reasonable steps to protect and prevent people from getting into their data.

Two-Way Computer Interaction

Other kinds of administrative or legal issues arise when computers talk to each other; where you have interfacing between one computer and another. For example, it would not be uncommon for your school district supply storehouse to have a computerized inventory that automatically re-orders supplies when a particular level is reached. Your school district computer would talk to a computer of a textbook publisher and say, "Send 500 replacement copies of this textbook." That, in traditional legal terms, would be a contract. But you have special legal problems in proving breach of contract or in enforcing a contract where the only communication between the buyer and seller is electrical impulses that human beings never saw and wouldn't understand if they had seen it. When you have nothing but two machines talking to each other and making a legal deal, it would be interesting to try to argue either the plaintiff's side or the defendant's side.

Computer Literacy

Now let's talk a little bit about the educational uses of technology. The feeling, of course, is that everyone should be able to deal with the computer as a life skill. The prevailing wisdom is that it's the wave of the future, and if you're not able to function as a computer literate, you haven't really had much of a high school education. A recent book by Marvin Cetron and Thomas O'Toole, Encounters With the Future: A Forecast of Life in the 21st Century, says that by the year 2000, there will be at least one million new computer programming jobs available in this country. The corollary of that is, I suppose, that even those who that aren't making their living as a computer programmer will have to have some skill in programming their own computers.

On the other hand, a recent study by Stanford Institute for Research on Educational Finance and Governance suggests that the predictions of the need for computer technology experts is grossly overstated. The Stanford researchers say that by 1990, we'll need only 150,000 new programmers, and 200,000 systems analysts as opposed to 800,000 fast food workers.

If a company like LEXIS can come out with a keyboard terminal and teach a lawyer of average intelligence how to use it in about an hour, what's the justification of taking a one semester course in law school to do it? The fact is that programs of one kind or another, with any luck at all, are going to be so accessible, so cheap, and so easy to duplicate, that you're not going to need for everyone to know how to do it anymore than you have to have everyone know how to repair a typewriter. All you'll have to do is take a little instruction on how to type, even slowly, and you've got it. Nevertheless, California is working on its high school proficiency standards, and the staff is going to be mandating a one-semester high school course in computer science and computer skills as a condition of graduating from high school.

The Information Society

The schools will need to address the use of computers in relation to the changes that will be made in society as a result of what is being termed the information society. The information society says that the future success goes to people who can access information. Information, rather than products, is what's going to be saleable. This offers a tremendous opportunity to schools to have programs that can result in social mobility.

In the past, for a person from a poor family, social mobility was generally perceived as the next rung in the ladder into a blue collar occupation. But that meant working for someone else. Getting a lot of money really meant having a lot of capital behind you. A person could not become an entrepreneur without having substantial capital. In the information society, people can become entrepreneurs by having access to information without having a lot of capital. And capital is going to be less and less important. The result is that students who start out poor can really make it into high paid consulting jobs if they have access to the right computerized data banks and computerized information sources. What kinds of information are available, and how one goes about getting at it are the skills they have to be taught, not necessarily the mechanical skill of how to type on a keyboard or how to wire a computer.

Equal Access

This issue gives rise to the challenges we have in terms of equal access, and I think those problems are severe right now. McGraw-Hill was field testing a new textbook they have called Computer Literacy: A Hands On Approach, in 13 school districts across the country in elective computer courses. They found that 66 percent of the students taking this course were male, and that very few of them were minority. The schools have enhanced that statistic in their disparity of who takes these classes. At this point, it's basically white males who are taking these classes. We further enhanced that by setting up minimum qualifications for taking the course, such as three years of math. Minorities and women don't take math proportionately. Some people are saying now that math skills really aren't necessary, that you're better off with English skills in terms of your ability to deal with computer logic. The schools have almost absolute control over who gets to take these courses and who does not get to take them. And when the school establishes minimum qualifications that have a disproportionate impact on minorities and women, you're going to have a hard time in court. You had better be able to demonstrate that students without three years of math really can't function very well in this course, and I suspect that you're not going to be able to demonstrate that.

The University of California at Berkeley did a survey of entering freshmen last fall and found out that 15 percent of the males entering Berkeley had a computer at home. Only 7 percent of the entering females had a computer available at home. Prior to entry, 48 percent of the male students had written a program within the past year while only 25 percent of the women had done so. Again, all of these statistics indicate that men enjoy about a two to one advantage in both their access to this kind of information and in their instruction.

We, in California, have a statewide testing program that tests 1st, 3rd, 6th, and 12th graders every year in an assessment program. We did a special survey in which we asked 6th grade students about equal access. The disparity between boys and girls was less for our 6th grade: about 21 percent of the boys had a computer at home, and about 15 percent of the girls had a computer at home. There is disparity but not quite as bad. Whereas 12.9 percent of the non-minorities had a computer at home, only 6 percent of the minorities had access to a computer at home. The schools that had computers also tended to be the high socio-economic schools, and the higher the socio-economic status of the school, or the pupils in the school, the greater the tendency was to use the computer to teach computer skills. The lower socio-economic schools that had computers tended to use the computers to teach basic skills, or drill, but not to use the computers to teach computing. It looks as though the traditional dichotomy in academic success and achievement between minorities and non-minorities is being accentuated by the way in which schools are using computers. And yet the opportunity for schools to use the new technologies to lower the socioeconomic gap is just the opposite.

You're always going to have socio-economic differences, and you're always going to have rich students with "stuff" at home that poor students don't have at home. What bothers me is that the schools are accentuating that difference by using their resources to put computers into the rich schools rather than the poor schools. They are not compensating students for what they lack at home. It's as if someone suggested that libraries ought to be put in the rich schools because the rich students have books at home and know how to use libraries better, and so poor students don't need libraries because they don't read at home anyway. The argument is fallacious.

I don't think that anyone deliberately sat down and said, "I have a good idea. Let's allocate what little money we have for computers for the rich schools." Part of that dynamic is not necessarily the school's decision. PTA's are buying computers and insisting that the principals put them into the schools and use them. But we still have, in spite of all the beatings in the courts over Serrano vs Priest since 1972, some rich districts with rich students in them and they seem to be keeping their advantage through the use of private resources.

Class Size and Interactive Computer Learning

Let me briefly address some of the teacher-related issues. I'm going to call your attention to the problems without offering you much help by way of an answer. There's an issue related to class size, although I'm not sure what to call it. Most states, including California, have maximum class size provisions. I think that tends to be a disincentive towards differentiated staffing patterns. It seems to me that one of the advantages, or one of the opportunities, to maximize the use of technology, is that you can deal with your staffing ratios differently. If you take it to the extreme and build an entire day focused around interactive computer learning, then your need for a teacher on the basis for one teacher for every 30 students has got to be different. It might be greater, it might less, but it would appear that your teacher or your aide ratio has to be different. At least if your computer is teaching, or testing, or grading, or evaluating, it seems that your need for the same amount of teacher time is different. Teachers are not going to agree to that. They will say that you have to have a richer teacher-pupil ratio just to manage this process, and maybe that's true as well. But there has got to be an impact somewhere on your staffing ratios. This is going to have an effect particularly if you bargain collectively with your teachers on what your class sizes are.

Teacher Training and Retraining

Second, you've got a tremendous problem with teacher retraining in educational technology. We have districts where because of declining enrollment, the average age of teachers is over 50. It becomes increasingly difficult to inspire those teachers to go for retraining. We tried to do that with provisions requiring teachers to have bilingual credentials. In any classroom where 20 or more students spoke the same primary language, the teachers were supposed to have a certificate of proficiency in that primary language in order to teach in that language. It becomes very difficult to get teachers who have been teaching for 15 or 20 years, probably successfully, to go back to school to take 9 or 12 or 15 or 18 units to get some other kind of credential. It's particularly hard if you're not willing to pay them to do it, or if you don't have the resources to give them sabbaticals. You're asking them to do that on their own time -- during the summers and at night, and we've had unions that have frankly told their people, "Don't do it. They can't make you do that." Well, they can. And we did. The issue was somewhat finessed when bilingual credentials were required because the districts that tended to be expanding were increasing the number of pupils of limited English proficiency, so we simply hired new teachers with bilingual skills.

It is more difficult to get a teacher to go back and get retrained than it is to hire a new teacher with that training. We have proposals for renewable credentials, where teachers as an ongoing requirement have to go back and get retrained. We don't have that program in place in most states, and it is difficult to instigate one. And yet, there's an enormous amount of research being done on the way students learn; and the methodology courses and the teacher-training institutions today are very different now than they were 20 years ago. We have teachers teaching without any update on this new research. We intend, in California, that every high school graduate take a course in computer technology before graduating, and we're going to institute that with the 1986 graduating class. We don't have that many teachers who can teach students how to work computers because the teachers weren't taught how to work a computer, and they are not not going to go back and learn, unless you go back and pay them to learn.

Third, for the other teachers who are not going to be teaching computers as a subject, but who are going to be using computers as an educational tool, the problem is even worse. It's almost necessary to retrain every teacher in the public schools in how to use this methodology -- how to use technology as an educational resource, how to integrate the kind of software and hardware that's available, and how to integrate that into their teaching strategy and the educational objectives that they have for their course.

Educational Changes With Computerized Instruction

A good point was made this morning. I think it got lost. It was that the use of this technology is not like using a television set or a movie projector where, at various times in the development of your lesson plans, you show a movie or watch a television program as an alternative to a discussion group or a lecture. Computerized instruction itself is changing the basic nature of education. And it's changing the basic way in which teachers have to teach.

We still look at teachers as being mental taxidermists -- stuffing the heads of students with facts and figures and ideas. With the new technology, we need to look at teachers in a different way. Teachers will be the managers of an educational process rather than the imparters of information, and the students will be able to learn at home. My son, who was sick for almost two semesters, still has home teachers coming once-a-week to have a one-on-one discussion just the same as if he were in class. That's ridiculous! There's no reason why, with a computer terminal in his home, he couldn't tie into the same learning environment the students are experiencing in class.

As a matter of fact, you wonder why anybody has to go to school at all anymore. If people are going to be working out of their homes as a part of their lifestyles, as some articles say, then the notion of climbing into your car and driving 20 miles to an office is obsolete. If I, as an attorney, can tie into the same data bank of cases, research,statutes, and materials using my little gizmo at home, why do I have to go down to the office? I can interact with my clients without ever leaving my home. Students can interact with their electronic teachers without ever leaving their home. Why does the student have to go to school? The role of the teacher in that kind of a instructional mode is very different.

Now, what do we do with the teachers that simply don't want to learn about computers? Well, I'm not sure the answer is in. I'm sure that most state statutes don't deal specifically with retraining for technology. Some state statutes may give districts or the state boards of education the authority to mandate courses of retraining. Maybe they don't even do that. By and large, I think that the statutes say that districts can evaluate teachers on a regular basis. Our statute says that the evaluation of the teacher has to be related to the pupil's progress. If school administrators are really willing to do this, are willing to believe this, and are willing to do their job, then some teachers are probably going to be dismissed for inefficiency, incompetence, or something else because they refuse to keep their skills current. Now that's going to be tough, and the unions are not going to take that easily. But if the research really does support the notion that, for at least for some purposes, students learn better with the new technologies on a more individualized basis and in a more diagnostic manner, then we really don't have a choice.

Maybe we can get our act together soon enough, and rethink the role of the teacher, and convince teacher-training institutions that these are the skills that teachers are going to need to have 10 or 15 years from now. In San Francisco, the average age of the classroom teacher is 54. In 10 years, there's going to be a tremendous turnover of classroom teachers. Probably we're going to be replacing these current teachers with teachers who are trained in the same methodology unless we can organize very quickly and get the teacher-training institutions to teach people to teach in a different way.

Educational Equity and Quality

Tinker vs DesMoines Independent School District, with its theory of "in loco parentis," was the start of the demise of the theory that students are subject to whatever whims we want to deliver to them. I think "in loco parentis," if not dead, is certainly quite ill. The notion of equality of educational resources, when you look at the language of the court decisions on school finance, deals with educational equity in terms of the equal protection clause of the constitution, and is really very close to dealing not with equality but with quality. In another case in California, Serrano talks about education being a fundamental interest. If education is a fundamental interest, then we're very close to a thorough and efficient kind of requirement that necessitates not only equality, but some minimum level of quality.

There're only a couple of places in our society where the manufacturer, or its equivalent, sells something and, if nobody buys, it's the fault of the buyer and not the fault of the seller. Churches are one place, and schools are the other where if nobody buys, it's the buyer's fault. The software is going to tell us there's a solution to that problem. You can really have an individualized program where each student can progress at his or her own rate. Mistakes in the student's thinking can be corrected by switches in the program without the teacher doing anything except managing some resources.

Resource management is also going to be important in terms of data banks and issues involving who has access to the data. I know that applies in a small group. Our office, for example, has a LEXIS computer terminal. For a rather small amount, we can dial up a bank of court decisions. Every appellate court decision in the country is in this data bank. My secretary can find every appellaet court case in the country that has mentioned the word computer, either in a context of computer crime or something else. That means that I have the same kind of information at my disposal that the Supreme Court does or that Shannon does with a much larger firm. Now, I can get the same kind of information that every other lawyer in the world has.

Now I'm not sure what the analogy is for an elementary school student or a high school student. But in any particular field in which a high school student is interested, there is going to be an enormous data bank of interconnected libraries. If your child were going to a high school that did not have a library at all, and there was no instruction in your child's educational experience in how to use a library, you would think that his or her ability to teach himself or herself and to get ready for the future would be severely limited. And you would be right. But as we mentioned this morning, what library research is going to mean to these students is not the ability to go home and go through the card catalog and use the Dewey decimal system. Library research in the future is going to mean knowledge about what data banks are available, what is on data banks that are interconnected, and how you get into them. Now that's the card catalog of the future that the students are going to have to use.

We have empasized the importance of data management and information management skills in our future society. We know now, more or less by accident, our schools are concentrating these technological skills on the students who are already rich. We're setting ourselves up for a sort of electronic Brown vs Topeka Board of Education where somebody shouldn't have to sue us to get a court to order the State Department to distribute that skill.

In summary, there are three broad areas in which some additional legal planning is indicated. First, in the area of administration, we must minimize our risk of liability for system copyright infringement (perhaps by clearly making illegal copying a grounds for disciplinary action), we must take reasonable steps to prevent illegal access by others to our data bank, and we must take reasonable steps to identify and correct errors in the data bank.

Second, in the area of educational programs, we must make certain that women, minorities, and the economically disadvantaged have equal access to computerized instruction. We must be concerned about access to classes in which computers are the subject of instruction (such as basic programming and operation) as well as access to classes in which computers are a medium of instruction of another subject (such as individualized instruction, testing, or drill). We have both an obligation and an opportunity to see that our students will have a chance for economic mobility when that will require access to large libraries of data.

Third, in the area of personnel, we must study the effect of teaching by technology on class size requirements, and we must have teachers trained or retrained to teach programming in computer operations and repair and to use computers effectively as a part of their teaching methodology.

More importantly, to the extent that the matter being taught is in a data base rather than in a textbook or in the mind of a live teacher, we must radically rethink the process of education and the role of the teacher as a manager of an individualized program rather than an imparter of information.

GROUP INTERACTION AND CONSENSUS BUILDING REGARDING OVERVIEWS AND PROBLEM AREAS:

A Summary of Representative Comments

There were three different group discussions during the Institute: one followed each of the two presentations on problem areas in education, technology, and the law. In addition to helping to clarify some of the issues outlined in the presentations, the group discussions allowed the group as a whole to make progress towards consensus building. During the discussions, individuals in the group were also given the opportunity to push issues one step further in the exploration of current and future education technology problems.

Although the discussions touched on many different areas, they clustered around four main issues: (1) technological effectiveness and computer literacy, (2) equal access and equity, (3) educational changes and teacher training, and (4) the legal issues of contract negotiation and infringement of patents and copyrights on hardware and software. To summarize the discussion as a whole, representative comments concerning each issue are grouped together in problem areas and consensus points and suggested solutions.

Technological Effectiveness and Computer Literacy

The Problems

Can the effectiveness of computers in the classroom be compared with instructional television? A few years ago school districts spent millions of dollars to put television sets into the classrooms, and now these sets are seldom if ever used. If there is widespread purchase and distribution of computers for classroom use, will computers be effective teaching tools? In what subject areas - and how - will they be used?

Consensus Points and Suggested Solutions

Although examples were cited where school districts have bought computers that are now sitting in boxes because the schools have no one trained to use them, most participants came to a consensus that computer technology cannot be compared with earlier technological fads. With earlier fads, the impetus for using the new technologies came from the schools whereas the impetus for computer use is coming from society. Society says that Johnny now needs to be able to read, write, count, and use a computer. Parents, PTA groups, and booster clubs are insisting that schools buy computers, and in many cases, are raising the funds themselves to buy them for the schools.

Computers were deemed to be effective if there were teachers trained to use them and if there were effective software. Although there was consensus that most of the current educational software on the market is "junk," presenters and participants pointed out that more effective software is expected to be developed soon. One of the reasons given for the current software problem is the experimental nature of most software as a teaching tool. In addition, it was pointed out that the development of good educational software is an expensive process and until now there has not been enough hardware in schools to encourage major companies to get involved. Major textbooks publishers are now starting to assemble teachers and programmers as teams to develop effective educational software.

Many participants also were excited about the potential for individualized instruction with interactive systems that can look at student responses, do some diagnosis, and actually generate some stimulus materials based on the response pattern of that particular student. The effectiveness of computer technology in this area of instruction was not only considered to be high now but to have the potential of being much higher in the future.

Presenters and participants seemed to agree that you cannot say that instruction by computer is better than instruction by a face-to-face teacher in all areas for all students but only that it is better in some areas for some students. Additional research needs to be done to define these areas and these special population groups so that computers can be used to free teachers for other teaching tasks.

The question of how computers should be used once they are in the schools was debated for some time. Computer literacy is not an easy term to define. Different research studies were cited which disagreed over whether we will need a large number of programmers in the future (and programming will be an essential skill) or whether people will mainly be using computers as a tool and will only need to know the rudiments of how to access computer information. Those who agreed with the research findings, which stated that computer programming will be an essential future skill, suggested that the solution to computer literacy training is to train students to be programmers. And those who agreed with the findings that stated that computers will be used mainly as tools suggested that computers be used mainly for instructional programming.

Since the research findings were inconclusive, a third all-encompassing solution was offered; it stresses both programming and data-base access skills. To be computer literate in this case would mean knowing how to program and how to use a variety of general purpose software tools, not just educational tools such as mathematic tools, reading tools, and data base systems, but also the things which people do on their home computers when they balance their checkbooks and use computational programming and graphic tools.

An article from the April issue of the American School Board Journal was cited which said, "Getting and using information by electronic means from distant sources should be second nature to computer literate students. Using a computer as a tool then, should be as natural as reading and writing."

Equal Access and Equity

The Problems

Throughout the Institute, discussions on computer literacy naturally flowed into heated discussions about equal access to computer literacy programs and information data banks of the future. Is this new technology creating new problems of equity? Is there equity with the technology now, and can we expect it in the future among school districts throughout the country and between minority and non-minority students within those districts?

Consensus Points and Suggested Solutions

Concern was expressed that this new technology is in fact creating new problems of equity since information management skills and computer literacy programs are currently being concentrated in the wealthier socio-economic schools where parents and PTAs are insisting on computer literacy programs. In fact, it was pointed out that where computers are used in lower socio-economic schools, they are mainly used for computerized instruction rather than teaching the students about programming and data bank access techniques.

The tenet that the new technology is creating new equity problems was challenged by an insistence that "we've got some different players, but the game is still the same, and it is simply socio-economic." It was pointed out that the "toys" we play with and educate with are a little bit different now.

It's not just textbooks and audiovisual equipment, but computers, and on-line data systems, and interactive programs. Although it is a serious problem, it is an issue that has been around for a long time; and the basic rules of the game have not changed. The approach to this problem is simply through money.

The rules of the game have changed according to another viewpoint. The new technology has an enormous potential to move the economic threshold down since on-line data bases can be used so that everyone has access to an enormous amount of information in a society where information has become the "stuff" of value. In addition, if the technology is so cost-effective that it provides new kinds of channels for new providers to come into the marketplace, then these new providers can also move that threshold down. The technology can also be ultimately what is viewed as a possible leveraging device to provide some program equity that is not available in simple dollars. An example was given of a very small school district "with 200 students in high school and an oil well for every student." The school district can't give away property by redistricting because it can't afford to lose any more students. In the past, it was difficult to compromise with the district on equalizing educational opportunities in the rest of the state when the court says to look at dollars as a resource. The district was willing to and did give up some of their money to the state in exchange for computers, earth stations, two-way cable, etc., that can provide program equity statewide that in the past was not possible.

Another example of a way to use the new technology as a leveraging device to provide program equity addressed the issue of individualized instruction for certain population groups. It was pointed out that students from Indian reservations have a fifty percent drop out rate when they go to non-reservation schools. With the new technologies, they can have (at the reservation itself) individualized education that is equal to education at non-reservation schools.

Student's equal access to new technology was seen as a current issue. Teachers are already having to deal with the fact that some students are bringing in papers that are typed on word processors with justified margins and automatic spelling programs while others are scrawling their papers out in longhand. What does interaction with a text processor do for students in terms of their growth and writing skills? Although there is no research data available yet on these issues, we do know that students from higher socio-economic homes are more likely than others to have new technologies such as word processors available to them at home.

A possible solution again would be to use the technology as a leveraging device by having computer and word-processing labs available to all students, perhaps in the school library. Then, you would only have to face the issue of insuring that all students were provided training to use the equipment in these libraries or labs. Entrance requirements for computer courses, for instance, would have to be closely scrutinized.

The only general consensus in the area of equal access and equity was that it is an extremely complicated issue which will require extensive research and careful planning to prevent future litigation.

Educational Changes and Teacher Training

The Problems

In one of the question and answer sessions, Weingarten was asked to give a description of how technology might be used in an ideal future classroom. His response follows:

"If technology has a free hand, and if the public school systems react in an aggressive way to using it, the classroom of the future will probably have a fairly large number of personal computers, nothing like the Apple now, but more on the capacity of a current $50,000 to $100,000 mini-computer. These will be hooked into video discs which will be used as data storage. They will be on-line to larger computer systems and larger information systems which are accessed through state-wide satellite links or cable links.

A technologically optimistic scenario would have all of these technologies linked together - not a room full of Apples, not everybody sitting in front of the TV set, but all of these technologies integrated with closer links between the schools and the homes, and the schools and work."

Will this type of widespread use of technology in the schools cause educational changes and will these changes be beneficial? Another problem related to this is teacher training in the new technologies. How do you train new teachers to use it and how do you re-train existing personnel?

Consensus Points and Suggested Solutions

There was general consensus that there would be educational changes with the new technologies and that they would be beneficial to the extent that they could individualize instruction and allow teachers to use more of their professional teaching skills in management of the educational setting. Although it was deemed possible for education to take place completely in a home setting, the consensus was that schools and one-to-one teacher interaction would continue to be important.

In the area of teacher training, there were a number of different problem areas with possible solutions suggested. The aging of teachers and the resistance of older teachers to training in use of the new technology was discussed. During in-service training sessions, participants had found that most teachers, regardless of age, react with enthusiasm to some limited computer training. The problems surfaced when teachers were asked to take courses in computers and to start using computers immediately in their classrooms. In this case, many older teachers resisted. One possible solution for this problem was to let natural attrition take care of the problem as teachers retire and to concentrate on training new teachers.

Another problem involves teacher resistance because much of the software currently available is "junk," or all the bugs are not out of the systems. Teachers do not want to put their jobs on the line for non-reliable systems. As school districts become more educated buyers of the technology and as the technology advances, this problem may also alleviate itself.

Teacher training in the new technology was also compared with the problem of motivating lawyers to change from writing out briefs to dictating them into cassettes. Although the lawyers intellectually know that cassette dictation would be more effective, they refuse to change because they "think as they write" and cannot easily change to a mode of "thinking as they are dictating." Retraining in this instance is quite difficult since it involves changing deeply ingrained behaviors.

Most participants felt that some teachers will fall by the wayside in the training process. If schools are going to go to a heavily computer-oriented educational system, no matter what form, schools will need to be able to really quantify teacher performance. A whole new set of criteria for judging teacher performance will have to be established based on the utilization of the new technology. And, in order to dismiss teachers who are mediocre and replace them with ones who are better, schools will have to tell teachers ahead of time how they are going to be evaluated. The controversial point is that schools are already having difficulty with teacher competency testing; additional criteria involving technology will be even more complicated to develop to prevent legal challenges.

Legal Issues Involving Contract Negotiation and Patent and Copyright Infringement

The Problems

The consultants presented a strong case for early lawyer involvement in contract negotiation to prevent future problems. Shannon Vale, in particular, cited a number of representative horror stories involving contracts. His list of "Seven Bewares in Contract Negotiation" given in Appendix B outlines this area as far as administrators are concerned. There is a presupposition though, that educators will know how to pick out hardware and teachers will know what software they need. Since participants found this to be rarely true, there is a problem in helping educators to know what they need and successfully find it before negotiating a contract.

After the contracts are negotiated and signed and the hardware and software are on-line, the possibilities for patent and copyright infringement are numerous. Faced with little if any legislative or regulatory direction for these technology legal issues, how can school districts protect themselves and their personnel?

Consensus Points and Suggested Solutions

In the contracts area, one possible solution is for educational managers to be taught how to choose computers and assess their individual technology needs. Future institutes might be planned to address this problem. In addition, in-service training will be needed for teachers to help them analyze and choose education computer programs.

Many of the potential problems in the patent and copyright area involve cases where an educational entity purchases a machine and some software and then makes it available to others through a consortium or through its regional or local districts. If agencies are using a machine as part of their institutional goal of helping their local agencies, then they might argue that the agency itself is using the machine through the local agencies and not infringing upon a patent by circumventing the patent owner.

Protection from copyright infringement can work the same way. If you have collected a lot of software pieces and you are just a conduit for distributing them to local areas, what are the possibilities for legal action? In an abstract sense, there was a consensus that it could be a violation of the distribution right of the software developer. On the other hand, there was a consensus that if you are not reproducing or selling additional copies and there is no question of the market being damaged, litigation would not be likely.

Another problem involves the difficulty of ascertaining whether particular software represented as in the public domain actually is or whether it is copyrighted material. Again, legally there could be a case; but the consensus was that if it was not a willful violation, litigation would not be likely.

It was argued that the issue of actually allowing schools to copy software that might be available in Education Service Centers would be analogous to photocopying. A solution here would be for administrators to look at the guidelines that have been developed for photocopying and institute similar ones for software duplication. The software should be considered to be similar to a book that people could check out but not duplicate. Since software costs are so high and they are easier to copy than books, there could easily be a copying epidemic throughout the educational system. Rules and regulations will need to be formulated to handle this.

Schools should keep abreast of current litigation in this whole general area since there are many similar issues being considered by the courts. Another solution is for schools to apply general fair use principles in the whole area of patent and copyright infringement.

ROUND TABLE: DISCUSSION OF LEGISLATIVE BARRIERS TO FULL USE OF NEW TECHNOLOGY IN EDUCATION

Introduction by: Patricia C. Duttweiler
Policy Anaylst/Conference Coordinator SEDL

Introduction

When discussing the optimum use of educational technology, it is advisable to look at what we have now. Basically, what we have are non-integrated, add-on technologies. Teachers use film projectors, ETV, or tape recorders as diversions from their established routine. I'm afraid that we will have teachers using computers as diversions as well. When they don't feel like lecturing or the textbook suggests that outside illustrations be used, instead of saying, "Well, we'll show a picture today," they'll say, "Well, how about using the computer today." In any sense of the word, that is not an optimum use of educational technology.

Instead we could have courses delivered by computer, interactive video and computer courses with teachers monitoring a number of students who are hooked up to a computer network. Each student would work at his or her own pace, and the computer would do the grading, timing, and branching, depending on the student's needs. Teachers could hook into the different terminals to see how each student is doing. In this type of educational environment, teachers would be used as professionals.

Those of you who have visited a classroom recently know that a lot of the things teachers are currently doing do not require a professional. They are doing a lot of housekeeping, a lot of babysitting, and not very much of their time is truly used in a professional way. If we would use teachers as professionals to design courses or supervise paraprofessionals who oversee the courses while the teacher is doing something professional with his or her time, we might have a more cost-effective use of education personnel. The cost-benefit ratio could be considerable since education is definitely labor intensive with most of the money allocated for salaries.

In the future, we could have students moving from subject to subject at their own pace. We have talked about individualized learning for years. But, when I was a teacher, there was no way that I could individualize learning at the high school level with 150 students a day. It becomes a possibility if you can use educational technology.

Industry uses interactive computers and videodiscs to train their people, and they are doing a good job with it. Why can't we use this kind of thing in our public educational system? And what about students at home -- either part of the day, all of the day, some days -- learning from other modes besides those in a classroom supervised by a teacher. I suppose homebound students, the ones who cannot attend school, are the ideal pilot students. Certainly parents who are interested in home instruction would welcome this sort of use of technology. Education has been expecting a revolution to come about because of technology, and we are still waiting for it. The question is, "Why?" Obviously, there are barriers.

The first barrier is the state of the art, and it has been discussed very competently by all three of our presenters today. The software, in particular, is probably the biggest drawback now, but the rapid development of hardware also is a barrier at this point in time. The cost of the hardware, the cost of the software, and the cost of the retraining are all financial problems to consider.

Lack of skills is another barrier. Colleges of education are not training teachers in new approaches and in new technology. The fact that teachers do not have the skills, and the fact that students, at this point, do not have the skills, presents a roadblock for technological advancement.

Another barrier is our traditional staffing pattern. The Commission on Secondary Schools recommends the practices and standards that good schools should meet. One example is the paraprofessional teacher ratio that is recommended. It is a 10 percent ratio. If you have 50 professional teachers, the recommendation is that you should have no more than 5 paraprofessionals. I don't know what the ratio should be, and I don't know how the optimum use of educational technology would change it, but I suspect that you could change that ratio considerably if you were using your teachers as professionals, using technology in the way it should be used, and having your paraprofessionals there in the sort of babysitting functions that so many of our teachers are doing now.

The second recommendation by the commission was a student-professional staff ratio of 21 students to one professional staff. When I was teaching courses such as psychology, sociology, and social problems with some awfully bright kids, I could have had 100 kids in the class and taught them effectively. With courses where half my class were minority kids who had difficulty reading, I could not have managed more than the 25 or 30 students I had. There ought to be some recognition of differences in staffing ratios, both in the kinds of courses, the kinds of students, and the methods of delivery. If the method of deliver is interactive computers the teacher could easily monitor more than 60 students at one time.

State regulations frequently preclude any recognition of differences. For example in some states the regulations require that the school average shall not exceed 30 to 32 pupils per professional staff member for elementary grades. In the secondary grades, no teacher shall teach more than 150 students per day. As a teacher I thought that was great; I didn't want any more students when I was teaching in high school either, and yet there were situations in which I could have handled more. I know why we do this; we do this so our kids don't get thrown into classes with 60 kids and one teacher where they don't learn anything. Maybe the time is coming when we need to see whether we really do need to be this rigid, especially when we are using technology.

The next area concerns traditional organizational requirements like established class lengths. The standard for accreditation is 45 or 55 minutes, depending on what kind of class you're talking about. Units of credit are defined as a course of five standard periods per week per session of a standard class length. You are now boxed into having a course that lasts 55 minutes and has to go five days a week through the whole session. There s no flexibility here for a student who wants to work at math for 20 minutes on the computer and then go on to English or something else. These are the kinds of things that, in my opinion, are proving to be barriers to our optimum use of educational technology.

Standards for graduation are also inflexible. Pupils shall be allowed to earn no more than five units per session: Why? Suppose a student has an I.Q. of 180; he or she can go through the material rapidly. The way our schools are set up now, however, there is no way he or she can do that. He's got to sit there and be bored through all these courses that last 55 minutes, five days a week. But if you change that requirement and let her do it at her own pace, you'll have students who get their Ph.D's. by the time they are 21 and ready to move out into the real world.

Most state standards discourage acceleration. There is often a restriction on the number of units that can be accumulated through correspondence, which kills the idea of learning at home or taking a course on your own. If you are not sitting in that classroom 55 minutes a day, five days a week, for the whole session, you're obviously not really learning "right." Other standards specify the types of encyclopedias which can be chosen. Even if there is a computer data base that has all that information available, faster and easier to use then a printed encyclopedia, there is no money to access the system.

It's easy enough to change any of these standards, but if you don't think in terms of the kinds of limits they place on your school system, you don't think about changing them. Most of you wrote me that "Well, the only thing I can see that might keep us from using instructional technology in our school is the teacher-pupil ratio." What I have done is to try to jog you out of thinking that just because your states law don't say, "You can't have computers in the school," there are no traditional barriers to using them. You must be aware of the barriers in order to change them.

Group Discussion

The round table discussion that followed Duttweiler's introduction centered on three different types of barriers to the full use of new technology in education: (1) standards and regulatory barriers, (2) personnel barriers, and (3) political and social barriers. A synthesis of the interaction, with representative comments, follows.

Standards and Regulatory Barriers

Legislative standards and regulatory agencies have designed various rules in most states to protect students and facilitate an environment which is conducive to learning. Unfortunately, some of the standards, like universal teacher/pupil ratios, can severely hamper the implementation of new technology in education. Although there was consensus that all standards and regulations are not bad, there was no overall solution to the problem of how to develop standards and regulations which would retain some flexibility.

One suggestion was to simply waive offending regulations and develop pilot projects to initially get technology into the classroom. In most states, experimental programs are allowed; all you have to do is request them and conduct them. A successful example of this approach was cited in which a teacher, who is a computer programmer and liberal arts major but not certified to teach, is teaching a number of different courses with the aid of computers. Because the school is small, there are not enough pupils to justify hiring a teacher for certain specialized subjects, but this teacher can use the computer to write programs and buy software to teach German, physics, and French to interested students. From all reports, the project is working, and the teacher is doing a tremendous job.

Another suggestion was to define accountability in terms of performance rather than quantities of items. Instead of counting the number of books a school library has, count the number of times students check out these books to read and how they read at the end of the year. A continuation high school in Mendicino, California, uses this concept.

The school has about one-fourth of the students in the district, and they are open from about 7:00 a.m. to 11:00 p.m. Students sign a contract to accomplish certain objectives, but they can do things when they feel like it.

Students come into the high school who cannot read at the ninth grade level and soon are complaining that their discs on the computer are missing, and they cannot finish their English compositions. Other students who had problems with math are now building a complete computer from scratch. The only problem encountered was that the regular classroom teachers "got up in arms" because students wanted to leave their classrooms to go to the continuation school. From this response, it appears that if you encourage flexibility for the schools that want it, public pressure in the rest of the schools will be strong enough to generate some change.

Personnel Barriers

There is an inherent resistance to change throughout the educational personnel system. Executive management institutes and teacher training sessions were suggested as one means to effect change. Someone suggested that there is a key group, guidance counselors, who are often overlooked in the training process but who exert considerable influence as gatekeepers.

It was suggested that one of the barriers to educational television was the problem of implementing it in the face of counselors who said that "It won't work because we can't schedule it that way," or "because we can't keep records on it that way." This group, then, also has to be trained in the new technology.

School boards with limited experience in technology can also be a big barrier. What many board members know about education is what they have experienced. You either have to broaden their experience or convince them that the implementation of new technology is simply an "adjustment" and not a major change. No suggestions were made concerning the logistics of broadening the board members' experience.

Political and Social Barriers

Most of the discussion involved talking about a new tool that would enable educational institutions to capitalize on diversity and divergent thinking to the greater social good, although the political mood is currently against divergent thinking and diversity. This presents a political and social barrier to the implementation of new technology. Yet, there is currently a political philosophy of deregulation. It was suggested that this philosophy of deregulation could possibly be used to remove certain barriers.

There was a general opinion that if education does not move rapidly into models of education that use technology, the commercial sector will start offering education of one kind or another through this technology to those people who can afford to pay for it. This could have both beneficial and harmful effects. As private institutions use the technology successfully, public opinion will work to remove the social and political barriers that may be keeping it from being implemented in public schools. But until that happens, you may have another "inner school" problem where those who can afford it insure that their children receive education in the new technology through private institutions.

Political and social barriers also exist to prevent schools from developing their own software. Although most of the current software is not efffective, when the schools try to assume a leadership role in the development of computer software, the private sector doesn't like it. There is a problem between public information and the institutions that traditionally disseminated free public information and the growing computer industry. The lawyers in the round table discussion group agreed that this growing industry is getting very aggressive at fighting any public on-line data banks and any public software development. This problem also gets complicated in cases where government contractors desire copyrights to protect the software they develop.

There was a general consensus that there are many good policy reasons for state education agencies to develop software when the private sector isn't coming up with quality stuff. But, it was emphasized that the concepts of preventive law have to be utilized to keep litigation at a minimum in this area. The argument the industry uses is that it's unfair competition to use government money to develop goods that the private sector could develop. But at this point in time, the government has to get more research and development into this technological area to develop protocols that can be built on. Currently, without protocols, development is so unprofitable that private industry cannot get involved. Therefore, there is an inherent "Catch-22" in this public vs. private conflict of interest question.

CLOSURE SESSION: SUGGESTIONS, STRATEGIES, AND RESOURCES

Cynthia Levinson
Project Administrator, SEDL

I am enough of an educator to know that I don't have the answers to what we've been talking about today. I have some questions though, and I want to ask some of the questions as a way of trying to bring us to closure. I would like to try and turn some of Vale's interesting "bewares" into some positive perspectives.

First, given what's been discussed today, I wonder what recommendations our consultants and others of you would give us that we can take home to our state departments, universities, attorneys general's offices, and school districts to recommend as possible solutions or at least steps in the right direction. Is there something we can take back to our agencies as a recommendation saying, "I can't keep us out of trouble, but here is a step that we can try to take."

Tom Griffin made an excellent point when he said, "Really, we should not allow the lawyers to be the decision-makers and policy-makers. The lawyers have to be brought in after some initial policy has been formulated. Then, you can ask the lawyers to check it out and demystify some of the constitutional principles so that we can begin to know where to stay out of the boggy areas, but don't bring them in too soon." So, secondly, can you tell us at what point we should bring the lawyers in when we're beginning to develop policies in regard to educational uses of technology at either the state level or the school level?

Response from Thomas M. Griffin:

I suggest that you should involve your lawyer very early. But, you need to ask your lawyer the right question. Don't ask your lawyer, "Can we do this or should we do this?" Instead, very early ask, "How can we do this?" Then let the lawyer figure out a way of accomplishing what the decision-maker wants to accomplish with the least risk of legal challenge. At that point, you need more resources than most of us have available by ourselves and some strategies for pulling together resources on a national level. I think we still have to work on this cooperative effort. It helps if you can go back home and try to make some of your decisionmakers aware of some of the pitfalls we've discussed as well as others that we may not have mentioned. Most importantly, support the kinds of thinking which will minimize the risks when you decide what you want to do and try to devise some ways of doing it.

Response from Fred (Rick) Weingarten:

I guess the real summary of what I said this morning and the interjections I've made through the day is that we have a wide venue of technology that's advancing very rapidly, and it's got to be taken seriously. When one focuses down too much on the microcomputer or the videodisc, you lose the big picture. The fact is that we as a society are changing the way in which we communicate and use information. This directly affects education since educational institutions are by and large information institutions. When you change the meaning, you change the institution. And so most fundamental legal challenges over the next decade will be those that really confront the basic nature of public education as a state institution.

Response from Shannon T. Vale:

I have the answer somewhere in my box with blinking lights on it. I'll pull it out before you run off. In terms of when to bring in a lawyer, for contracts, I would say after you have administratively reached the decision of what types of system you want and you're now a few weeks away from either issuing the bid announcement or bringing in an outside consultant; then you call your lawyer. The lawyer doesn't have to be involved while you're still deciding what you want.

In the copyright area, I think again you should bring in your lawyer after you've decided what you want to do, but possibly before substantial resources have been dedicated to it - certainly before you let anybody outside see what you've got, and before you take any concrete steps to use that copyright. My overall general recommendation to take back to local administrators is just one line, "Trust a computer company as much as you'd trust a general contractor." I think that would say it all to a local administrator.

Closure from Cynthia Levinson:

I'd like to thank each of you individually as consultants and participants for being here. We have a future conference planned which relates to this topic. "Information and the Economy: Policy Issues for Educators" will present research on the extent to which the growing availability of information and the growth of information industries is affecting the economies of our six states. We will also learn about state and federal agencies that are making policy regarding information exchange, and we'll discuss the educational implications of these movements such as for content and delivery of curriculum, new skills, and budgeting. This symposium will take place June 23-24, 1983, in Austin. This invitational symposium will culminate in policy recommendations from the participants to relevant bodies, such as state and federal agencies, universities, education associations and the business community.

We also have a technology conference -- using technology -- scheduled for next year and a third Preventive Law Institute on an as yet unannounced topic.

APPENDIX A

AGENDA
Institute on Preventive Law and Technology

MORNING

7:45am Coffee and Conversation

8:15am Welcome

Dr. Martha Smith, Division Director,
Southwest Educational Development Laboratory

Introductions

Dr. Patricia Duttweiler, Policy Analyst/
Conference Coordinator, SEDL

8:30am Overview: PREVENTIVE LAW

Dr. Thomas Griffin

8:45am Overview: THE NATURE OF INFORMATION TECHNOLOGY AND ITS APPLICATION TO EDUCATION

Dr. Fred Weingarten

9:30am Group Discussion

Discussion Leader: Dr. Patricia Duttweiler

10:30am Break

10:45am Problem Areas

COPYRIGHT AND INTELLECTUAL PROPERTY RIGHTS

CONTRACTS AND ACQUISITION OF HARDWARE/
SOFTWARE

Mr. Shannon Vale

11:30am Group Discussion

Discussion Leader: Ms. Cynthia Levinson

12:30pm Group Luncheon

Kachina A Room

AFTERNOON

1:30pm Problem Areas

STUDENTS' RIGHTS: PRIVACY AND EQUAL ACCESS

TEACHERS' TRADITIONAL ROLE AND HESITANCY TO CHANGE

Dr. Thomas Griffin

2:15pm Group Discussion

Discussion Leader: Dr. Martha Smith

3:15pm Break

3:30pm Round Table

Discussion of Legislative Barriers to Full Use of New Technology in Education

Discussion Leader: Dr. Patricia Duttweiler

5:00pm Closure Session

Suggestions, Strategies, and Resources

Cynthia Levinson, RPSP Project Administrator

5:30pm Adjourn

7:00pm Dinner

We have dinner reservations for 7:00pm at La Tertulia Restaurant, 416 Aqua Fria. Separate checks will be presented.

PRESENTERS

Fred (Rick) W. Weingarten is a program manager of the Communications and Information Technology Program for the Office of Technology Assessment, an agency of Congress responsible for performing long-term analyses of technological trends and their impact on public policy. Weingarten earned a B.S. degree in engineering from the California Institute of Technology and a Ph.D. in mathematics from Oregon State University.

Thomas M. Griffin (at the time of this Institute) was administrative advisor (chief counsel) to the California State Department of Education and the State Board of Education. In this capacity, he administered the legal program, acted as legal advisor and attorney, acted as liaison between agencies, and drafted proposed legislation. He is currently in private practice in Sacramento, California, specializing in educational law. Griffin received a B.A. in Political Science, an LLB. and J.D. from Hastings College of the Law, and a Ph.D. in Education Administration from the University of California at Berkeley.

Shannon T. Vale is an attorney with Bracewell and Patterson in Houston, Texas. Vale specializes in educational law in general and copyright, intellectual properties, and contract concerns specifically. Vale received a B.A. degree in history and German from Rice University and a J.D. from Southern Methodist University School of Law.

PARTICIPANTS

1. KENNETH BACA

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Baca is a lawyer new to the Division of Vocational Rehabilitation Services. He addresses any legal problems that affect the division.

2. SUSAN BROWN

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Brown, as director of Chapter II programs, is responsible for the operation of 97 grants in school districts under Chapter II. She is also responsible for the Indo-Chinese Program in New Mexico.

3. JOHN CAIN

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A senior associate with the National Institute of Education, Cain is legal advisor to the State Initiatives Projects. This project seeks to determine the kinds of research in which SEAs are particularly interested.

4. THOMAS CHASTAIN

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Chastain is an educational specialist for Evaluation, Testing and Data Management. He is chairman of the State Department Task Force on Microcomputers.

5. **DAVID HAMILTON**

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Hamilton is section chief, Legislative and Legal Analysis Section and is general counsel for the State Department of Education. He is chairman of the lawyers conference of NASBE and has recently published a case comment in *WEST Education Law Reporter* on the creation science law.

6. **GARY HASELOFF**

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Based in the Texas Education Agency's Instruction Resource Division, Haseloff chairs the TEA Committee on Computers and Instruction.

7. **CLYDE HATTEN**

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Hatten is the coordinator for ESEA Title IV. He has been involved in the development of information packets for microcomputer decision making for local schools.

8. **KAY JACOBS**

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Jacobs is an assistant attorney general and represents the State Department of Education and the Regents of Higher Education. Her main concern this past year has been the *Education for All Handicapped Children's Act*.

9. **JOHN F. KENNEDY**

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Kennedy is a former assistant attorney general for New Mexico. In that position, he handled litigation for the State Department of Education. He is now an attorney in private practice [illegible] Simons, Cuddy, and Friedman specializing in the representation of local school districts.

10. JEANNE KNIGHT

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Knight, as director of Elementary and Science Education, is responsible for program review and program development K-12. She is involved in a project that would strengthen principals' skills in observing, evaluating, and developing professional growth plans for teachers.

11. SHARON LEASE

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Lease is assistant administrator of Curriculum Services and specializes in reading.

12. ALAN MORGAN

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Morgan is deputy superintendent for Instruction for the New Mexico State Department of Education.

13. CHARLES NOLAND

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Noland is acting general counsel of the State Department of Education, the State Board of Education, and the Superintendent of Public Instruction. He researched and wrote the state board's regulation on student rights and responsibilities and has written articles on reduction in force.

14. DANIEL PILKINTON

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Pilkinton is deputy director of the General Division of the State Department of Education and also acts as federal liaison for the SDE. Having spent many years in finance and administration, Pilkinton has dealt with problems in financial accounting, auditing, school loans, and statistics.

15. PAUL RESTA

Office of the Director
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Chief Research Advisor to the Director of the National Institute of Education, Resta is currently responsible for leadership in institution-wide programs dealing with educational technology.

16. VIRGINIA RESTA

Coordinator of Chapter I
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Resta works with teachers from 21 schools in programs for children having reading difficulties. The Albuquerque School District recently voted a bond issue for the purchase of computer hardware.

17. MICHAEL SCHOUEST

Educational Computer Network of Louisiana
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Schouest is director of Management Information Systems, Educational Computer Network of Louisiana (ECNOL). He has taught computer systems and has a background in engineering and business.

18. **N. F. SMITH**

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Smith, for many years a school superintendent, serves the Mississippi State Department of Education as assistant superintendent.

19. **SCOTT SPENCER**

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Spencer is assistant general counsel to the State Board of Education and the State Department of Education. He offers opinions on matters of law to local school boards and also presents workshops on such matters as science teachers liability, students rights, and law enforcement and interaction with the schools.

20. **JUDY UNDERWOOD**

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Underwood is a staff attorney for the Texas Education Agency. In addition to offering legal opinions, she is hearing officer that hears adjudicated matters that come through the agency.

21. **CHARLES WATSON**

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Watson is the educational administrative supervisor and specialist in mathematics and science. He has been instrumental in organizing a training and resource lab for the agency.

22. CAROLYN WOLF

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Wolf is an assistant attorney general assigned to the State Board of Education and the State Department of Education for which she handles litigation.

23. EDGAR YOUNG

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Young is assistant attorney general and represents the state in educational matters including a study on and revision of school finance.

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Martha L. Smith, Director, Division of Educational Information Services, SEDL

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Patricia C. Duttweiler, Policy Analyst/Conference Coordinator, RPSP

Barbara A. Lecroy, Administrative Assistant, RPSP

Merily H. Keller, Editor, Institute Proceedings

APPENDIX B

OUTLINE FOR NEGOTIATING CONTRACTS FOR THE ACQUISITION OF COMPUTER HARDWARE AND SOFTWARE BY STATE EDUCATION AGENCIES

by
Shannon T. Vale, Attorney
Bracewell and Patterson

I. PRE-NEGOTIATION PRINCIPLES

Ultimate Principle: First determine agency needs, then and only then decide on the type of equipment, the brand of equipment, and the agency's strategies and schedules for implementation of the proposed system.

A. First Step - Prepare a Thorough Requirements Analysis

1. Management must ask "what do we wish to achieve, and why do we wish to achieve it?"
2. Consult in-house technical people regarding overall goals.
3. Compile a detailed Requirements Analysis, to be drafted either by in-house staff or, if necessary, by an outside consultant.
4. If a consultant is required, beware of their tendency to promote products which they have developed, or in which they have a vested interest.

B. Second Step - Drafting Detailed Performance Specifications

1. In acquisitions or relatively small scale or off-the-shelf products, this issue may be adequate addressed by the Requirements Analysis described above.
2. If contemplating the purchase of a system of any complexity or one which requires substantial modification or custom development, detailed Performance Specifications are advisable.

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3. If, due to the experimental or custom nature of the product, detailed specifications are not yet achievable, a two-phase contract is recommended:
    a. Phase One - Contract for Drafting of Requirements Analysis and/or detailed Performance Specifications.
    b. Phase Two - Design, implementation and testing of the system outlined in Phase One Performance Specifications.
4. If a substantial acquisition of custom software is contemplated, specifications are essential means of reducing the purchaser's risk.

C. Miscellaneous Pre-Contractual Issues

1. Be extremely wary of vendor proposals that offer you "Beta Site" opportunities (i.e. to serve as a test facility for newly developed products). Beta Site arrangements may superficially appear to be cheaper but:
    a. They often involve additional risk and delay (due to the newness of the product); and
    b. Of agreements generally include extremely limited warranty provisions restricting the remedies of a dissatisfied and damaged purchaser to a mere refund of any monies already paid to the vendor.
2. Involve the agency's attorney in contract negotiations as early as possible. Be aware that, whether the agency realizes it or not, the vendor's attorney has been involved behind the scenes in one way or another from the very beginning of the negotiating cycle.

3. Before establishing contact with potential vendors, insure that relevant requirements of state law have been fully considered.

   a. Bid Law Requirements - Beware of using an arguably illegal "single source" Request for Proposal or accepting a vendor bid which is not responsive to the Request for Proposal. In general, make sure that all other specific bid law requirements are properly observed.

   b. Constitutional Requirements - Watch out for restrictions against multi-year payout provisions.

   c. Other Statutory Considerations peculiar to your state.

D. Favorite Horror Stories Regarding Inadequate Pre-contractual Planning

II. SPECIFIC CONTRACTUAL TERMS WHICH THE PURCHASER SHOULD BARGAIN FOR

Ultimate Principle: Treat a computer contract as if it represented just an everyday substantial acquisition. Resist the natural tendency to be intimidated by unfamiliarity with the subject; roll up your sleeves and bargain hard.

A. Obtain Proper "Documentation," i.e., Detailed Product User Manuals and Service Manuals.

Basic Principle: Insist that in-house technical personnel review all available product documentation prior to execution of contract.

1. Be aware that even experienced users may refer to their documentation several times per day -- it is their roadmap to the system. Also, take account of the fact that (to quote one rather understated author) "programmers and engineers are not known for their writing skills and seldom assume fallibility on

users be able to understand the material which will act as their guide map to the operation of the product once the vendor's salesmen and training staff have left you to your own "devices."

2. Insist upon receiving documentation that meets reasonable standards of detail -- a comic book is no better than a Greek dissertation.

3. Do not accept vendor excuses for failing to provide access to documentation prior to the execution of contract.

4. Remember - the less adequate your documentation, the greater chance that you'll be at the mercy of vendor every time your new system hiccups. Special consultation fees can escalate extremely quickly.

B. Obtain Satisfactory Vendor Commitments Regarding Installation Assistance

1. Require the vendor to agree to supply a certain number of hours of free installation assistance, then establish a cost schedule for any assistance required in excess of that amount. Do not wait until installation time to negotiate such price schedules; make the vendor negotiate them with you while they are still attempting to clench the deal.

2. Utilize the concept of "acceptance," i.e., that the purchaser can back out of the contract with full reimbursement if the product does not gain purchaser's "acceptance" by passing specific testing procedures by a certain date.

   a. Agree upon testing mechanisms before signing the contract

b. For simple purchases, a vendor-supplied testing system may be satisfactory.

c. Elaborate hardware or software installations will require extensive and detailed testing procedures. These procedures should be established in advance by consultations between the vendor and your in-house technical personnel or consultants. The detailed Performance Specifications described elsewhere can serve as a guide for designing such benchmark testing procedures.

D. Obtain Satisfactory Vendor Commitments Regarding Training Assistance

1. The vendor should agree to provide specified quantities of free training sessions, with additional training to be supplied at agreed upon rates.

E. Include Detailed Contractural Provisions Regarding System Maintenance

Basic Principle: Don't kid yourself - a recent industry analysis shows that the average computer facility spends 50% of its software budget on maintenance, and that 90% is "not uncommon."

1. Note four different types of hardware and software maintenance:

a. Debugging - i.e., repair of the system's design defects.

(1) Debugging should be provided at no charge for a substantial period of time. In contracts for mass-market hardware or for "off-the-shelf" packaged software, debugging services generally consist of supplying the purchaser with corrective information

as it becomes known. With more complex or customized systems, debugging may be an extremely time consuming, high cost and labor intensive operation; therefore, the purchaser should insist upon iron-clad provisions committing the vendor to a substantial period of free debugging assistance. Such provisions are often incorporated into the contract's warranty language.

b. Update services - i.e., vendor agreements to make system improvements developed at a later date available to the purchaser at reduced prices.

   (1) Attempt to contract for a period of free updating.

   (2) Attempt to obtain the vendor's agreement that, after the free update period has expired, the purchaser can obtain updates on the so-called "most favored nation" basis (i.e., if your software costs $10 in 1982, and the new improved software costs $13 in 1983, you can pay the $3.00 differential and obtain this updated software).

c. Traditional hardware and software maintenance services - i.e., vendor agreements to troubleshoot and otherwise assist in post-warranty operation of your system.

   (1) Determine whether "self-test" diagnostic software exists, and, if so, negotiate regarding the availability and price of such software.

   (2) Determine in advance the vendor's maintenance rates and the nature of the maintenance services provided

by vendor (i.e.., vendor service calls vs. phone banks manned by vendor technicians vs. electronic telephone diagnosis by direct communication between your machine and the vendor's machine vs. self testing programs and equipment).

d. Modification Services - If hardware or software modifications are needed as a result of product defects or known elements of the design which render the product incapable of performing some or all of the computing tasks contemplated by the agreement, the following issues can arise:

   (1) Who will be responsible for performing and paying for such required modifications?

   (2) What will be the warranty implications of modifications performed by the purchaser?

   (3) Who performs documentation revisions? If modifications are performed by the vendor, appropriate documentation revisions should also be performed by vendor. Note that without documentation revisions, the existing documentation may become perilously inaccurate and misleading.

e. In any substantial contract, attempt to have the parties agree upon basic definitions of these four types of maintenance. It is almost inevitable that disputes regarding the appropriate characterization of a particular problem will arise at some point during the term of a contract for the acquisition of complex equipment.

F. Consider the Copyright Impliations of the Purchase

1. Insure that the purchaser's rights to duplicate programs and documentation manuals for backup, multi-machine use and/or archival purposes are clearly established (unless the contract is so silent as to these matters that one can reasonably infer that unlimited internal use of these items is contemplated).
2. If the contract is for the development of custom software, determine who will own the copyright in the software.

G. Negotiate Payment Schedule and Warranty Terms Carefully

Basic Principle: Resist vendor pressure to pay balance of purchase price upon delivery. Negotiate to withhold final payment installment until the expiration of the warranty period.

1. Make sure that the warranty provisions are sufficiently clear and are not inconsistent with, e.g., any contract language concerning periods of free debugging or maintenance service.
2. If possible, expressly incorporate into the contract the Performance Specifications, the Requirements Analysis and the vendor's "puffing" correspondence.
3. A good rule of thumb is that the smaller and less established the vendor, the tighter the warranties must be.
4. Generally, smaller vendors are more flexible with regard to warranty provision modifications. When negotiating with large mainframe computer manufacturers, do not expect significant flexibility on warranty provisions.
5. Vendors commonly attempt to limit their liability for defective goods or services by placing a monetary cap on liability. Vendor contracts usually try to place this cap at a level

approximately equal to the cost of the products being purchased. If possible, these "limitation of damages" provisions should be eliminated or refined so as to be more advantageous to the purchaser.

H. Make Sure That Broad Indemnity Clauses in Favor of the Purchaser are Included in The Contract

Basic Principle: Without exception, every contract for the purchase of computer goods or services must include a promise by the vendor to protect the purchaser against all expenses incurred as a result of copyright, patent or trade secret actions brought against the purchaser by third parties.

III. SUMMARY OF SEVEN IMPORTANT "BEWARES" FOR CONTRACT NEGOTIATING

A. Beware of your own data processing people -- the ones who over react with excitement for new systems and the ones who refuse to consider any for which they weren't trained.

B. Beware of consultants -- those peddling their own systems, those who encourage you to become too dependent upon them, and those who may not be solvent two years from now.

C. Beware of salesmen -- computer hardware and software vendors exert tremendous pressure, and they are so professional, low-key, and knowledgeable, that they can influence you quite easily.

D. Beware of your own administrators -- the ones who want to buy hardware and software for purely political reasons as the ultimate "new technology" and the ones who are opposed to anything new because "if it was good enough for daddy, then by gosh it's good enough for me."

E. Beware of user resistance -- there is a lot of data processing stress.

F. Beware of your own equipment and don't put too much faith in it -- you need back-up systems for insurance.

G. Beware of the Courts and the way in which they wrestle with software problems.

SEDL

The Southwest Educational Development Laboratory (SEDL) is one of a network of regional educational laboratories and university-based research and development centers operating to improve educational practice through research, development, technical assistance, and dissemination activities.

RPSP

- Providing assistance in planning and problem-solving since 1979, the REGIONAL PLANNING & SERVICE PROJECT (RPSP) serves the Chief State School Officers or their designees in Arkansas, Louisiana, Mississippi, New Mexico, Oklahoma, and Texas.
- RPSP provides information for policy analysis, planning, and decision-making, and provides access to experts in policy and planning areas. It is a client-responsive project which seeks to solve problems and address issues cooperatively.
- RPSP focuses on such issues as consolidation of programs, preventive law, accountability and competency, legislative relations, public confidence in education, staff development of school administrators, and forecasting educational developments.
- RPSP is a project of the Division of Educational Information Services of the Southwest Educational Development Laboratory and is funded by the National Institute of Education.

REGIONAL PLANNING COUNCIL

RPSP is guided by a Regional Planning Council consisting of representatives of the six state departments of education in the region. The members are:

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Arkansas State Department of Education

Mr. John Dupre
Assistant Superintendent for Academic Programs
Louisiana State Department of Education

Mr. N. F. Smith
Assistant State Superintendent of Education
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